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PORT OF CALCUTTA

125 Years

1870 - 1995

CALCUTTA PORT TRUST

PORT OF CALCUTTA

125 Years

DR. SATYESH C. CHAKRABORTY
EDITOR

(1870-1995)

CALCUTTA PORT TRUST
15 Strand Road, Calcutta 700 001

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COMMEMORATIVE VOLUME

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उप-राष्ट्रपति, भारत
नई दिल्ली
VICE-PRESIDENT
INDIA
NEW DELHI-110011

August 2, 1995

MESSAGE

I am glad to know that the Calcutta Port is celebrating its 125th anniversary in October 1995.

This Port has made pioneering contributions to the opening up of the country's trade and commercial relations with the rest of the world. It can also take pride in the economic development of the nation. In the context of changing international situation and liberalisation of ecomomy the role of this oldest port assumes greater significance.

I have great pleasure in sending my good wishes for the success of the celebrations.

Narayanan K.R.

(K. R. Narayanan)

Prime Minister

New Delhi
October 7, 1994.

MESSAGE

I am happy to learn that the Calcutta Port Trust is celebrating its 125th anniversary. This is an important event for this Port which has played a crucial role in the country's economic development. I convey my best wishes to all the people working in the Port on this happy occasion.

P. V. Narasimha Rao

(P. V. Narasimha Rao)

GOVERNOR OF WEST BENGAL

RAJ BHAWAN
CALCUTTA

JULY 31, 1995

MESSAGE

I am happy to learn that Calcutta Port is celebrating its 125th year of service to the nation.

Calcutta Port has been leading the other Major Ports of India not only as the oldest Major Port in the country, but also in terms of changing with time, coping with challenges and demands of trade and communication. It has played a consistent and crucial role in the economic development of the country and especially of the Eastern Region.

I am confident that the Port will strive to take advantage of the new opportunities created through on-going reforms and catalyse the growth of the country, and that of the region, by providing valuable services.

I convey my best wishes on this happy occasion.

K. V. Raghunatha Reddy

(K. V. Raghunatha Reddy)

Chief Minister
West Bengal

October 07, 1994.

MESSAGE

I am glad to know that the Port of Calcutta is stepping into its 125th year of service to the nation on the 17th October, 1994. This Port of Calcutta which is the oldest major Port in India, has been serving the whole of the eastern region and beyond by providing a very important infrastructure for the trade, commerce and industry. For any organisation, getting into 125th year is a very major landmark and Calcutta Port Trust can justifiably feel proud for the role played by it in the Indian economy.

I wish all success to the Calcutta Port and also to the celebration of its 125th year.

Jyoti Basu

Jyoti Basu

मंत्री
जल, भूतल परिवहन मंत्रालय
भारत
MINISTER OF
SURFACE TRANSPORT
INDIA

New Delhi.
Date : 21.9.95

MESSAGE

It is heartening to note that Calcutta Port Trust will complete 125 years of its commendable service to the Nation on 16th October, 1995.

Calcutta Port was the premier port of the country at the time of Independence despite its constraints as a riverine port. With the liberalisation of the economic policy of the Union Government, an industrial resurgence has started materialising. Because of its inherent strengths and locational advantage, the Calcutta Port has immense growth-potential to cater to the emerging demands of such liberalisation. I firmly believe that Calcutta Port Trust will live up to its reputation by taking full advantage of the opportunities thrown by the opening up of the industrial and commercial potentials in the country.

I wish a bright future to the Calcutta Port Trust on the completion of 125 years of service to the Nation.

M. Rajasekara Murthy

(M. Rajasekara Murthy)

उपाध्यक्ष
योजना आयोग
नई दिल्ली-११०००१
DEPUTY CHAIRMAN
PLANNING COMMISSION
NEW DELHI-110001
INDIA

MESSAGE

I am happy to know that Calcutta Port, the oldest port of India, would be completing 125 years of its existence and service to the nation. This is an occassion for celebration and also to recollect with pride the contribution of the Calcutta port to the economic development of the country in general and of the eastern region in particular.

In the context of economic reforms, one the major objectives of the 8th Plan is to modernise the existing major Ports so that they achieve competitive efficiency to take full advantage of the global developments. It is encouraging to note that Calcutta Port which continues to be the gateway for trade and commerce in the eastern region has made efforts to take full advantage of the new opportunities being thrown up by economic liberlisation policies initiated by Government of India.

I have great pleasure in conveying my best wishes on this happy occassion to both the management and employees of Calcutta Port and hope that this commemorative volume would serve as a useful source of reference on our oldest port.

(Pranab Mukherjee)

वाणिज्य राज्य मंत्री
भारत
नई दिल्ली-११००११
MINISTER OF STATE FOR
COMMERCE
INDIA
NEW DELHI-110011

Do No. 1904/CM/95

MESSAGE

I am happy to learn that Calcutta Port is celebrating the 125th year of its existence with the objective of facilitating trade through appropriate upgraded systems and facilities. This is a 'land mark' for this Port which has played a pioneering role in the country's economic development.

Our country is poised to increase significantly its exports and continue with economic reforms already initiated. Calcutta Port can play a significant role in this field by taking advantage of its strengths and planning for development, oriented towards the new opportunities.

I convey my best wishes on the occasion.

(P. Chidambaram)

सी० एन० रामदास
C. N. RAMDAS
सचिव
SECRETARY
Tel. No. 371 4938

भारत सरकार
Government of India
जल, भूतल परिवहन मंत्रालय,
MINISTRY OF SURFACE TRANSPORT,
ट्रांसपोर्ट भवन, Transport Bhawan
१, संसद मार्ग, 1, Parliament Street,
नई दिल्ली-११०००१
New Delhi-110001

MESSAGE

I am happy to learn that Calcutta Port is celebrating the occasion commemorating its 125th year of existence.

Calcutta Port, since its establishment, has always served as an important trade link with the rest of the world. The contribution which this Port has made towards the economic development of this country is significant and substantial. This Port has already taken a lead in attracting private investment for its development. The Port has tremendous potential for growth with the help of private sector.

I convey my best wishes on the occasion.

October 13, 1994.

(C. N. Ramdas)

वाणिज्य सचिव
भारत सरकार
नई दिल्ली
COMMERCE SECRETARY
GOVERNMENT OF INDIA
NEW DELHI-110011

No. 4712/CS/94

30th July 1994

MESSAGE

The Calcutta Port is celebrating its 125th Anniversary from October this year. This is a landmark not just for Calcutta, but, in fact for the evolution of India's mercantile interests. Not only is Calcutta our oldest Port, but it continues to be one of the most important, providing a life line for eastern part of the country. Exports are a national priority and Ports are, therefore, a crucial link in our international trading network. With the liberalisation of economic and trade policy, Indian exports have shown a remarkable growth. Indian Ports will have to upgrade their facilities and systems to match the future requirements. It is a compliment to Calcutta Port that they have already introduced innovative management systems and I am sure this Port will be able to match the rapidly expanding demands arising from growth in our two-way international trade.

(Tejendra Khanna)
Commerce Secretary

FOREWORD

On 17th October, 1870, an Act to appoint Commissioners for making improvements of the Port of Calcutta (Act V of 1870) after receiving the assent of the then Governor-General-in-Council was put into effect. This was the birthday. The basic concept of a public trust as an autonomous, self-financing and non-profit making entity underlines the organisation of Calcutta Port Trust (erstwhile Commissioners) from the very begining. We are in the midst of a glorious 125th year. The long journey has seen far reaching changes, political, social, economic and technological in India, influencing the growth of economic and industrial life in the vast hinterland of the Port, India's foreign trade and coastal trade, as well as the inter-modal split of cargo across various modes of transport. Calcutta grew and prospered as the principal seat of the East India Co. and dominated the entire economy of the country as the political Capital for about 130 years. Even when the administrative seat was shifted to Delhi, Calcutta continued to exhibit for some time the dynamism of trade and commerce, finding its reflection in the affairs of the Port. The depth availability in the river, however, continued to fall short of the requirements and expectation of the new challanges of the technologies invading the transport sector, especially the shipping sub-system. The lagging behind of economic activity in the region, as well as policy measures, tended to have an effect on the state of health of the region, including the Port. Despite all these, that

the Port could handle 20.535 Million Tonnes of cargo traffic registering a record in 1994-95 as the Celebration of the 125th year commenced is truly a manifestation of the resilience of this Port.

The coming into being of Haldia Dock Complex was the first pro-active significant step the Port took to cope up with the challenges of offering better draft and mechanised facilities for speedy turn-around of ships, especially for dry bulk, liuquid bulk, and container cargo. With time, however, both dock systems, Calcutta and Haldia have charted out a complementary role for themselves; Calcutta concentrating primarily on container and break bulk cargo, with unflagging interest in encashing buoyancy of liquid bulk traffic at Buj Buj; while Haldia has concentrated more in the short-run, and mid-term, on liquid bulk and dry bulk cargo, with long-run interest continuing to focus on container traffic, as well.

As one takes stock of the events that took place during the long journey of the Port, one cannot but observe that economy of the country is now changing fast. Economic activity in the State of West Bengal is showing signs of buoyancy and signs of a brighter prospect for the Port are unfolding.

One may as well reflect on some of the highlights of performance of the Port in the current year, notably the following :-

- MT "Gandhar" - Suez-Max vessel (1.40 lakh DWT) visited Haldia Dock Complex (HDC) on 6th March, 1995, creating a record in respect of the largest vessel to visit Calcutta Port recording highest productivity as well.
- Calcutta Port handled 5.26 lakh tonnes of Sugar (29% share of the national traffic) : the maximum handling by any Indian Major Port.
- Improved availability of Pilots has made detention of ships, due to non-availability of Pilots, a thing of the past.
- Materialisation of new traffic : Rice export to Bangladesh from HDC and import of SKO on account of private party at Buj Buj Jetties of Calcutta Dock Systems (CDS).
- Calcutta Port holds second rank in terms of number of vessels calls at Indian Major Ports; The total number of vessels called during 1994-95, was 1563, registering an increase of the order of 8%.
- At Container Terminal at CDS, 194 TEUs were discharged in the night shift of 21.3.95 recording highest output in a shift.

The Port's thrust continues to be on increasing volume of cargo handling and consequently revenue earnings, reduction of cost in peripheral areas, and in offering better and cost effective services in core areas viz. in marine and cargo - operations.

At CDS modernisation of infrastructure like roads, drainage, storage area, lock entrance etc. and development of one berth for containers and reorienting certain other berths for the aforesaid purpose, while harvesting the buoyancy in respect of liquid-bulk cargo, are priority areas. Developing/using additional berths no. 10, 11, alongwith revamping/modernisation of marine and cargo operations and rail/pipe-line evacuation system primarily for dry-bulk and liquid bulk cargo are short-run priority areas for HDC. In the medium term, this trend is expected to continue, with sharper focus on 'building' facilities for revenueyielding, high growth areas of liquid bulk and dry-bulk cargo, exploring various options, including building the foundation of long-run robust solution of new site(s) offering deep-drafted facilities, with economy of scale and significant returns.

Privatisation in specific areas, primarily for attracting investment, with related land-use, including the possibility of development of SBM/Off-shore handling facility around Digha High or Saugor Island for handling POL Crude tanker could be an important instrument of development. Development of ship repair complex at Haldia by private enterprise is also planned alongwith expectations of private-enterprise investment for modernisation of ship repair facilities at Calcutta.

For celebrating the 125th year of the Port, it was considered necessary to focus on, and appraise from different perspectives, the issues relating to processes that led to the development of the Port or tended to affect its growth. It was also deemed necessary to obtain benefit of the views of a corss-section of people - policy-makers, users, academicians, opinion-leaders, other inter-facing organisation, people who were at helm of affairs of the Port in the past and the like. The objective is to synthesize and develop meaningful options for coping with the environmental challenges.

The publication of the Commemorative Volume is an exercise in this direction. We have invited articles from varous persons in different fields and have opened our windows, as well, to permit a whiff of fresh air of constructive criticism to blow. We consider this as our strength.

The articles in the Commemorative Volume may appear to be somewhat fragmented, focusing on diverse aspects and issues and from different perspectives. The search for integration, we hope, will enable our enlightened readers to offer us new insights for building, growing and harvesting through strategy for - mulation in future.

The Commemorative Volume has taken almost a year to get finalised and printed. This has been mainly due to the long time taken for obtaining contributions from eminent personalities and also because of the exacting demands of producing

a published volume matching the standards that we seek to attain in this landmark year.

The publication of the Commemorative Volume has been steered by a Steering Committee headed by Shri H.P. Roy, Deputy Chairman (Haldia) with support from all concerned. We feel indebted to them.

On this 125th year we, once again, pledge ourselves to the development of this Port.

Dated : July 5th, 1995

(Dr. Bikram Sarkar)
Chairman
Calcutta Port Trust

PREFACE

Calcutta Port, the oldest major port in India, celebrates its 125th year this year. It has been a long and fascinating journey, eventful and marked with many ups and downs. The port has grown along the banks of river Hooghly, from the screw-pile jetties near the heart of the city of Calcutta to the modern Dock Complex at the estuarine region at Haldia and with further potential to grow southward. In the older docks of Kidderpore and Garden Reach (Calcutta Dock System) manual handling of cargo has been replaced by giant gantry cranes. Emergence of Haldia Dock Complex as one of the most modern docks of the country, having fully mechanised POL and dry bulk terminals, is undoubtedly the most significant milestone since 1970, when the port celebrated its 100th year. The development of new ports along the eastern coast of the country, decline of economic activities in the eastern region and new technological developments in the shipping and transport leading to gravitation of cargo ships towards "Nodal" ports, will be the key referral issues in the macro planning for future developments of the port.

How did the port meet the challenge of the changes so diverse in nature and for so long a time?

One has to look at the impressive track record of the port in the recent years to understand the answer which lies in the simple fact that the port has been sucessfully administered and managed by bands of dedicated officers and workers, with the Board of Trustees providing the required leadership. The farsightness of this group has ensured the transition of Calcutta Port from its medieval existence to its present 'state of the art' cargo handling operations. The port has been able to play a pivotal role in the infrastructural development of Eastern India through constant exercise of perspective planning, project management, human resource development,

modernisation of infrastructure and equipment and successful management of its interface with the environment.

Challenges still loom large before the port. The port has to increase its market share of port activity in the face of increasing competition. There is urgent need to reduce surplus manpower and thereby cut down overhead expenditure. Other important areas include streamlining of operation, resource mobilisation through increased cargo operations, estate management etc., introduction of modern methods of navigation and pilotage, increase in the river draft in the estuaries to accommodate bigger ships and parcel size and so on. It will be a most absorbing management task to make the port forge ahead after successfully meeting the internal and external challenges.

At the ground level this would imply structural changes involving adoption/ evolution of new systems and procedures and making the organisation more flexible and alive to the current realities and needs, changing in the process the organisational culture. We must understand and sensitise ourselves to the key issues of economy and development which will largely decide, not only future of the port but also the future of all regional developments. This exercise of publication of Commemorative Volume to mark the 125th year of Calcutta Port Trust was undertaken on the realisation that it is essential to subject ourselves to apprisals from different angles and perspectives and examine the major issues relating to the processes that either make or mar the development of a port. We have tried to benefit from the views of people who know and can perceive from a broader perspective and a distant time-horizon, the complex interplay of forces and processes that impinge on the port and who have the insight to suggest ways and means to cope with the challenges. We have ample faiths in the resilience of this great port to meet any challenge, both at present and in future, and grow by integreting the current realities and future trends.

The publication of Commemorative Volume has been a daunting task not only because of momentous occasion to which it is related, but also because of the large volume of information that has been shared. This has involved considerable amount of ground work, discussions, editing and other connected activities. We hope that publication of Commemorative Volume to mark the 125th year of Calcutta Port Trust will meet its objective and be of use to future generation of port Managers and research workers.

H. P. Roy

(H. P. Roy)
Deputy Chairman,
Haldia Dock Complex.

FROM THE EDITOR'S DESK

Calcutta was a destination of the sea-faring vessels for transhipment of men and materials for at least three centuries. However, there was no single formal institution to administer the functions of this port till October 17, 1870. On that date, the Government of India established for this purpose a formal institution and named it as the Commissioners for the Port of Calcutta. Subsequently, this institution was given wider powers to discharge its responsibilities under the watchful eyes of the Government of India and was renamed as the Calcutta Port Trust (CPT). Notwithstanding such institutional changes, the CPT considers 1994-95 as the year marking 125 years of its existence and wishes to celebrate its 125th birthday on October 17, 1995. Publication of a commemorative volume is a part of this ceremony.

The idea of observing an anniversary is to create an opportunity for the near and dear to record their belongingness and to share collectively their compassion for an entity that was once born. There are many in our small world who would be only happy to record their feelings about this port, given the opportunity. To create such an opportunity, the CPT set up a Steering Committee and approached many eminent persons to write.

Forty-nine persons of eminence, no small a number, responded by sending in their observations in diverse styles, ranging from anecdotal reminicenses to researched essays. Thirteen amongst them had, in one time or the other, worked in this port. Another thirteen are still serving this port. The remaining twenty-three writers can be best described as persons concerned about this port as scholars, specialists, stimulators or users and in any combination of these. Their wide range of perceptions emulated emotions of similar ranges as pleasant nostalgia, cool analysis, anxious assessores of prospects, solicitors of better deals, hard defenders, etc. Each one has a message to convey. The objective of organising an anniversary has thus been fulfilled.

Forty-nine authors produced forty-five articles between them. To put these together into an anthology was a task assigned to the Editor. To assist, a Sub-Committee was set up to look after the administrative issues. I take this opportunity to acknowledge the salutory support that I have received as the Editor from the Members of the Steering Committee and the Sub-Committee. There are also the others who had silently put in their uncomplaining services behind the screen. Their services are also acknowledged without reservation. None of them are, however, responsible for any decisions of the Editor or their consequences. The authors nevertheless are responsible for the views expressed respectively, which in no way should be seen as the views of the CPT or of the Editor.

There is no satisfactory model available for structuring an anthology. The structure that I have constructed can possibly be questioned for its merit. There was however a queue to follow, which unmistakenly emanated from the interactions that I had with the people at this port. I wished to follow their desires. They wanted to discover, in the context of this anniversary, the range of available options to pursue and to make this port once again vibrant. The past appeared to them as glorious; the present is fraught with relentless fight against odds. The future should hold something promising. None could deny them their dreams. The issue was to let their dreams emerge from conscious understanding of the reality. This I have tried to achieve by structuring the diverse visions of the many writers into six themes. The sequencing of the themes require explanation.

It is often not understood, far less realised, that a port is nothing more than an artifact, say like a sword, intended to do some specific things. Like any other artifact, the discovery of its need and the design of its construction are matters dealt with by the society at large. Like a sword that can be made of different designs, so also is a port. Irrespective of its location, shape or form, this artifact is used to service a linkage between land and water transport systems. Like any other artifact, its use is governed by the decisions of the society. Such decisions are conditioned by complex interplay of many social forces manifested as stakeholders. It is, therefore, essential that the motives of the stakeholders are analysed to evaluate the status of a port at any point of time. Study of history helps in this regard.

The above theme has been handled by six authors, which together bring out quite clearly the changing status of the Port of Calcutta over time as a function of the changing motives of social-forces. Anticipation of the motives of the society certainly calls for skill ; but one has to endeavour to acquire such a skill. If otherwise, the operators of this artifact believes that it can handle the affairs as an autonomous entity, then it can only condemn itself by holding on to false promises. This is the

substantive message that I have received from the six essays under the first theme.

A port has to locate itself on where water meets land. This meeting place, like any other part of natural environment, is ever changing in its orientation. Such changes can often invalidate an earlier location of a port. The forces of nature are empowered with so much of energy that man can hardly afford to mobilise enough energy to counteract the processes in most instances. He can only adapt himself to changes. He can do so only by anticipating the course of nature. The five essays grouped under this theme amply bring out the tasks for a port in this regard. These essays reveal how the CPT is trying to understand the behaviour of nature on the interface between land and water in this part of the world. These also show how the society at large may be working at cross purposes. To enlighten the society to work out a concerted programme of adaptation to nature in the long as well as in the short run is itself a task. Lack of attention to this task, as it will be seen in the essays of the other writers, has stimulated contrary speculations about the future.

Enlightenment is, however, a product of two way interaction between the stimulators and the recipients of ideas. An idea has to be generated by one and absorbed by the other to arrive at a consensus for concerted action. However, both have structured mind, like sieves, capable of unconsciously allowing some information to store and others to percolate through and get lost.

The mind is, of course, a product of culture sustained within organisation, be it the family or the office. The reminiscences of the nine writers put into this theme reveal the CPT as a cultural set. However, these are based on personal memories, which may not necessarily reveal the collective ideation about this organisation. To fill the gap, I had to prepare two articles, based on the records available within the CPT, but with restraints not to let my opinions cloud understanding. I will stick to my oath of restraint and would not state what these articles together reveal. Let the readers draw their own conclusions with their respective "sieves" !!

The fourth theme is full of substance. Fourteen eminent persons have raised issues that the CPT has to respond to, sooner or later. All these are challenges that the CPT has to address to. Some are small issues requiring the CPT to examine its own cultural set to arrive at resolutions. There are the others requiring national consensus. They cover between themselves all that the CPT needs to assess to discover options for the future. There were, however, three small issues on which none wrote. Once again, I volunteered to prepare articles based on the information available with the port. We should wait and see how the decision makers address these issues in the course of time. Not all the issues the CPT alone can resolve.

I can only state that in meeting the challenges, the decision makers may not feel as left alone. There are, of course, the stakeholders who have specific motives, therefore clear demands, for which they will surely fight to realise their missions. These missions have been dealt with in the previous section. In this section, we are concerned about many others who are not the immediate stakeholders. Eight such 'friends at the door step' have sent in their promises and expectations, which I have put together under one theme. The CPT is indeed a fortunate institution to have so many friends representing resourceful organisations.

The last theme once again reinforces the historicity of the CPT, the river and the society. The three articles remind us that time indeed is a refreshing river. It flows and will continue flowing. It depends on us how "breathers" are found therein.

I conclude by admitting that I have enjoyed the work and of working with the members of the CPT. I recognise how difficult it has been for them to work with a temperamental person as I am. They have indeed proven their courage.

S. Chakraborty

Calcutta

July 31, 1995

Satyesh C. Chakraborty

On the Contributors

Shri A. Ananthakrishnan : has a distinguished career as a Civil Engineer & Planner, retired (1983) from the Ministry of Surface Transport, Government of India as Development Advisor (Ports); currently engaged in training and consultancy services to many international organisations.

Shri R.K. Arora : M.Sc. (Physics, 1967), M.Tech (1969) from Birla Institute of Technology & Science, Pilani and Graduate of National Defence College, India; research career at the Tata Institute of Fundamental Research, Bombay; currently functioning as Senior Director, Department of Electronics, Government of India.

Dr. Arun Bandopadhyay : M.A. (History) & Ph.D. (History); currently functioning as Reader in Modern Indian History, University of Calcutta.

Dr. Somnath Bhattacharya : M.A. (Ancient Indian History & Culture, and History), Post Graduate Diploma in Museology (Calcutta University) and M.A. (Art History), Institute of Fine Arts, University of New York; training in Metropolitan Museum of Art, New York; currently functioning as Professor of Museology, University of Calcutta.

Dr. Sunil K. Bhattacharya : Civil Engineer with Ph.D. (Hydraulic Engineering); awarded Padmashree and Fellow of National Institute; retired as Chief Hydraulic Engineer of the Calcutta Port Trust; currently engaged in consultancy services with many national and internatinal institutions.

Shri Ashok Bhatnagar : has a distinguished career as Civil Engineer; served the Indian Railways and Nigerian Railways; retired as Chairman, Railway Board and ex-officio Principal Secretary, Ministry of Railways, Government of India.

Dr. Deb Kumar Bose : M.A. (Economics, Calcutta University) & Ph.D. (Economics, London School of Economics & Political Science, University of London); served as Economist in the Indian Statistical Institute, Calcutta and as Member, State Planning Board, Government of West Bengal; currently functioning as Chairman, West Bengal Pollution Control Board.

Shri Arun K. Chakrabarti : M.Sc. (Applied Geology, Indian Institute of Technology, Kharagpur) and Post Graduate Diploma in Hydraulic Engineering (Delft, Netherlands); Fellow of the Institute of Engineers (India); currently functioning as Deputy Director, Hydraulic Study Department, Calcutta Port Trust.

Shri A.P. Chakravarty : Civil Engineer; implemented the Project on Haldia Dock Complex; served the Port of Paradip; retired as Chief Engineer, Calcutta Port Trust.

Dr. Bhaskar Chakrabarty : M.A. & Ph.D. (History, Calcutta University); currently functioning as Reader in Modern Indian History, University of Calcutta.

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Dr. Anadi Kumar Chatterjee: M.Sc. and Ph.D. (Applied Mathematics); currently functioning as Deputy Director (Computer), Hydraulic Study Department, Calcutta Port Trust.

Shri B.R. Chatterjee : Mechanical Engineering; implemented the Project on Haldia Dock Complex; retired as Chief Mechanical Engineer, Calcutta Port Trust.

Shri Somnath Chatterji : M.A. (Canterbury) & Barrister-at-Law (Middle Temple); distinguished jurist; currently functioning as Honourable Member of Parliament, India and Chairman, West Bengal Industrial Development Corporation.

Shri Tapan Kumar Chatterji : B.Sc. (Chemistry) and Foundation Course of the Railway Staff College (Vadodara, India); currently functioning as Deputy Railway Manager, Traffic Department, Calcutta Port Trust.

Dr. Pratap Chandra Chunder : a distinguished jurist, educationalist, writer and artist; served the Government of India as Honourable Minister of Education, Social Welfare and Culture.

Shri S.B.Das : B.Sc. (Physics); an Executive Officer of the Calcutta Port Trust; currently functioning as Deputy Chairman, Calcutta Dock Labour Board.

Shri S.K. Das : professional in Medicine; retired as Chief Medical Officer, Calcutta Port Trust.

Shri T.C. Dutt : M.A. (Economics), Calcutta University; joined the Indian Administrative Service; served as Chairman, Calcutta Port Trust; retired as Chief Secretary, Government of West Bengal; currently functioning as Election Commisioner, Government of West Bengal.

Dr. Rabin Ganguly : M.A. (Geography, Calcutta University), Master in Regional Planning and Ph.D., Indian Institute of Technology, Kharagpur; currently functioning as Professor of Regional Development and Environment Management, Indian Institute of Management, Calcutta.

Mr. Takao Hirota : M.Sc. (Civil Engineering, University of Washington, USA); distinguished career in UN-ECAFE, Japan International Cooperation Agency and Ministry of Transport, Japan in Planning, Project Engineering and Research in transport development; currently functioning as President, Overseas Coastal Area Development Institute, Japan.

Shri M.K. Kargupta : B.Sc. (Physics); joined the Indian Administrative Service and served the Government of India and West Bengal; served as Deputy Chairman and later as Chairman, Calcutta Port Trust.

Shri A.C. Kayal : LL.B. and M.A. (Political Science), Calcutta University; served the Government of West Bengal; currently functioning as Legal Adviser, Calcutta Port Trust.

Shri Charan Singh Khairwal: M.Sc. (Economics), University of Delhi; joined the Indian Administrative Service and served the different Ministries of the Government of India; currently functioning as Joint Secretary (Ports), Ministry of Surface Transport, Government of India.

Mr. Donald McDowell : Fellow of Institution of Civil Engineers, Member of International Association of Hydraulic Research and Permanent Member of International Association of Navigation Congress; served as the Chief Hydraulic Engineer, Calcutta Port Trust; currently functioning as Emeritus Professor, University of Manchester, U.K.

Shri R.E. Mistry : distinguished career as Pilot in the Bengal, Hooghly and Calcutta Pilot Services; currently associated with the Calcutta Port Trust after retirement.

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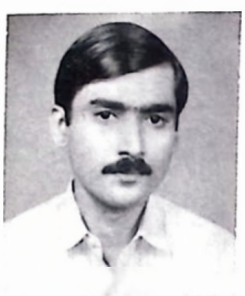

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CALCUTTA CITY AND PORT : SIAMESE TWINS

Pratap Chandra Chunder.

Nature's freak, the Siamese twins originally meant congenitally united born in Siam. In other words, the twins are physically united since birth. Applying the ideas to the city of Calcutta and its port, we shall try to examine the inter-relation between the two entities to find out to what extent this designation is correct. This attempt necessarily leads us to refer to the histories of the city and the port.

II

In the undisputed *bainama* or transfer deed of 16 November 1698 between a branch of the Savarna Roy Chowdhury family of Barisa and the English East India Company by which the former at the instance of Mughal Prince Azim-ush-shah transferred the *Zamindari* rights of the villages of Sutanuti, Kalikatah and Govindapur to the latter Company. Calcutta appears both as a village (*dihi*) and revenue area (*pargana*). This supports the reading of the Ain-i-Akbari of Abul Fazl Allami (1596), "*Kalikate wa Bakoya wa Barbakpur O Mahals*", although Sir Jadunath Sarkar reads Kalna instead of Calcutta. P.T. Nair prefers Kalikata, with which we agree (P.T. Nair, *Calcutta in the Seventeenth Century*). If this view is correct, Kalikata appears in history as a *Mahal*, a *Khas Mahal*, and a village (*dihi*) and an important unit of revenue administration under the Mughal Government. Although the village nestled on the eastern bank of the river Bhagirathi, its character as a port is not at all explicit in the earlier period.

However, there are two doubtful passages in the Bengali Mangal Kavyas, one Manasa Mangal of Bipradas Piplai (1495 A.D.) which just mentions Kalikata, which the overseas merchant Chand bypassed while floating down the river Bhagirathi; the other Chandi Mangal by Mukundaram Chakravorti (C.1580 to 1585 A.D.) which not only makes a similar mention of Kalikata in connection with an overseas voyage of another merchant, Dhanapati, but also contains a significant passage in some version as follows :

"Dhalipara Mahasthan
Kalikata Kuchinan
Dui Kule basaiya vat

Pasane rachita ghat
dukula yatrir nat
Kinkare bandaye nana hat."

In this passage Kalikata sported *vat* (road or enclosed ground), *ghat* (stone steps on the river), *nat* (frolicks or dances of the tourists) and *hat* (market resorted to by the servants of the overseas traders). The overall implication seems to be that village Calcutta by this time acquired the character of a river port having roads or enclosures, stone-made steps to the river, frolicks of tourists and the resort to market by the servants of traders. However, these poetic references to Kalkata have been totally rejected by serious scholars such as Sukumar Sen and Akshaya Kumar Sarkar as spurious (P.T.Nair, *op. cit.* pp. 29-30). Thus, although Kalikata appears in history as a village and revenue unit in the sixteenth century but not as a port, that privilege belonged first to Saptagram and then to Hooghly up the river; the river at the former site silted up and river's depth at the latter fell, so that ocean-going vessels could hardly carry their wares to those ports. It was time for Calcutta to rise in overseas trade.

It was the pioneering Portuguese who dropped their anchor at Garden Reach to the south of Calcutta and carried their merchandise from their ships to country boats up the river and put up annual temporary shelters on the bank for the purpose. N. Mukherjee states, "One may hazard a view that in the teeming mushroom growth germinated the first seeds of Calcutta to grow to fullness at Charnock's touch over hundred years later". (*The Port of Calcutta : a short history*, p.19). But the Indians were not lagging behind, for trading families of Seths and Bysacks migrated from the upper reaches of the river, set up flourishing mart, specially of cotton yarn at Sutanuti on the north of Kalikata and founded the village of Govindpur on the south. Three

contiguous villages had the Zamindari family of Barisa as their feudal overlord with probably Kalikata as their headquarters round the tank at the present Benoy-Badal-Dinesh Bagh. According to traditions, under a peepul tree merchants assembled at Baithakkhana to exchange their goods and form bands to keep off dacoits. This spot is said to be a favourable resort of Job Charnock, the English Agent, where he puffed his hubble-bubble.

It was to Charnock and Charnock alone that Calcutta owes its existence as the permanent settlement for the English Company's commerce in Eastern India. On the 24th of August 1690 he landed for the third time at Sutanuti, but never to go back. After his death a powerful Zamindar Sobha Singh rebelled against the Mughals, who then gave permission to the English to defend themselves by constructing a fort. Charles Eyre, Charnock's son-in-law and the Company's head in Calcutta, built the first Fort William on the river. He also secured by purchase, the zamindary rights in 1698 as we have seen. These rights made the English the local rulers under the Mughals. Having the taste of political and administrative power, the Company went ahead to consolidate and extend it and had little time to attend to the needs of the port. So when the town of Calcutta blossomed into a city, the port of Calcutta somehow managed to exist although the external trade passing through it continued to boost up the economic powers of the Company. This port of Calcutta had no separate existence apart from the town at the early stage.

III

Ostensibly the English came to India as traders, but the Company declared its real imperialistic policy when in December 1687 it asked the chief at Madras "to establish such a politie of civil and military power and create and secure such a large revenue....as may be the foundation of large well-grounded secure English dominion in India for all time to come". (*The Gazetteer of India*. Vol. II, 356) Thus trade and commerce began to play a second fiddle to the racous imperial band. No wonder that the port as a weak link in this aggressive design should continue to be neglected. Of course in 1668 the English had set up a competent pilot service along the treacherous river. Still on 24th September 1694 the ship Royal James and Mary wrecked on the shoal. The first Master Attendant (Harbour master) was appointed in Calcutta in 1694 to strengthen shipping in the river, but the Court of Directors did not approve of the appointment. (Nair, *op.cit.*,p.345). The river banks eroded and it was decided to repair them with local bricks "procurable for 1/2 rupee per thousand" (*ibid*). Yet large amounts were spent for the development and beautification of the town.

Ships were loaded and unloaded in a leisurely manner. The Company's pilot service was secretly used for interlopers. A pricing ware-house was set up with mud and thatch materials and by 1709 it was out of repairs. When the Fort William was completed in 1716, a ware-house was built against its walls. Cyclones often devastated shipping as well as houses. One such occurred on September 30, 1734 which left Calcutta "like a place that have been bombarded by an enemy" (Mukherjee, *op. cit.* p.27).

The city had a local administration under a Zamindar assisted by a Black Zamindar, who collected dues and maintained law and order. About 1717 the original settlement was extended by adding to it 37 towns such as Belgachia, Ultadanga, Simla, Kankurgachi, Sealdha, Tangra, Chowringhee, Entally and so on, all well-known localities today. A Letter Patent of 1726 granted a proper municipal government and administration of justice. The Mayor and Alderman were chosen from the prominent citizens and the Mayor's Court administered justice under the authority of the Crown in England. But the reforms of the port were tardy and belated. Thus it was in 1758 that Marine establishment was set up under a Master Attendant, accountable to the Directors to control the pilot service, keep record of shipping at the Port and effect repairs (A.C. Ray, *Maritime India : Ports and Ships*, p.67).

IV

The fact is that while trade was important, the English Company tasted virtual sovereign power after the battle of Palssey and the grant of Dewany in Eastern India. They were more concerned with the administration of the country and acquisition of wealth through governing the land from the city of Calcutta than mere trade passing through the port of Calcutta. Naturally the port affairs were neglected. The Regulating Act of 1773 introduced the Governor-General and his council, the Supreme Court and other far-reaching changes in India. Englishmen ceased to be mere traders. They became real rulers. No wonder that in such a change over the port of Calcutta could not expect significant improvement.

However, some piecemeal reforms did take place. For instance, in 1765 the Directors ordered annual survey of the river under their direction. In 1768 steps were taken to improve the marine service and pilot service. In 1775 Major Tolly caused the old channel of the river to be excavated. Between 1780 Colonel Watson got land from the Company to start a dry dock and founded a marine yard at Kidderpore. He began the construction of a wet dock which was stopped by litigation. However, he built three ocean-going vessels in Calcutta. In 1790 at the Bankshall ghat, the first dry dock was built. In 1807 the sons of Col. Oriel Kyd took over the docks built by Watson. Between 1801-28, ships were built at Uluberia and Titagarh. The Company, busy with conquests in India and Burma, tinkered with the development of the port.

Calcutta by the middle of the nineteenth century became for a while triple capital, of the British India, of the Presidency of Bengal and (about 1845) of the ultra-Gangetic settlements of Penang, Malacca and Singapore. The Port of Calcutta suffered from the rivalry of the ports of Madras, Bombay and other places. Thus there could be no comparison between Calcutta city and port in importance.

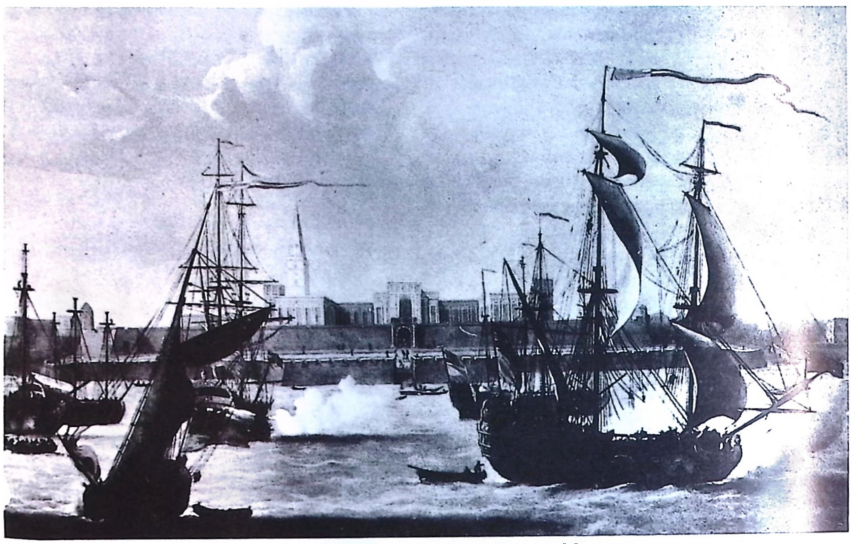
In the interest of trade and commerce, particularly in respect of large hinterland, some significant reforms were introduced for the port in the second half of the nineteenth century. By this time the Company's rule ended in India after the Sepoy Mutiny and India was ruled directly by the British Crown. Business got a tremendous boost. Already steamships gradually replaced sailing boats; Suez Canal was opened. It reduced the distance between Europe and India considerably. In 1866 a River Trust was established but it failed to deliver goods. By the Act of 1870 the Port Commissioners were empowered to manage the affairs of the Port. They discharged their duties successfully for 125 years, a matter of extreme gratification. The city also did not lag behind. It got an elected Municipality around 1876.

V

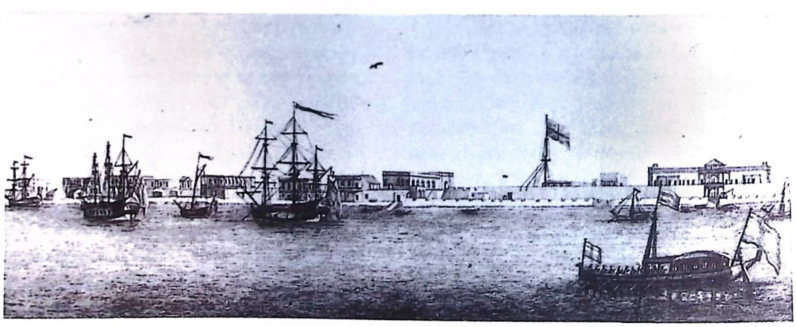
During this long period the city of Calcutta lost its political pre-eminence when India's capital was shifted to New Delhi and Bengal was partitioned in 1947. But the Port of Calcutta continued to maintain its steady, though unspectacular progress.

It faces big problems. The volume of water down the river dwindled. The Damodar Valley Corporation prevents the flushing of silt at lower reaches. Big ships find it impossible to approach the port. Haldia is offered as an alternative. It also faces impediments. Dredging alone cannot make the river more manageable.

The city of Calcutta owes a large part of its economic pre-eminence through its port, but its political and administrative leadership far outstripped its economic development. The Siamese twins of Calcutta city and port, though of disparate growth, seem to have come closer. Both should be nourished and sustained by progressive measures and able administration. This is the challenge of the time.



1. Fort William on the Hooghly : 1730
by George Lambart Samuel Scott.



2. A View of the River : 1778
by Thomas Kitchin

EARLY DAYS OF COLONIALISM AND THE PORT

P. Thankappan Nair

"The Governor and Company of Merchants of London Trading into the East Indies", who are simply called the East India Company, Company or the English, had advanced to the town of Hooghly in January 1651. The particular quarter the English selected for their trading operations at Hooghly was called Golgot or Golgotha, now represented by the site of the District Jail. Job Charnock, the redoubtable Agent of the East India Company, reached Golgot in 1655 or 1656 and lived at Patna, Kasimbazar and other places before finally settling down at Calcutta on August 24, 1690 on account of the facilities for the British shipping.

The Port of Calcutta, which extends from the Sutanati Point of the River Hooghly to the Sandheads at the Bay of Bengal, served as the grand gateway to north and north-east India since the advent of European traders on the soils of Bengal. The hinterland of the port of Calcutta extended from the Himalayan kingdoms of Bhutan, Sikkim, and Nepal to the present States of Delhi, Haryana, Punjab, Uttar Pradesh, Madhya Pradesh, undivided Bengal, Bihar, Orissa, and the composite State of Assam.

That the Port of Calcutta is much older than the metropolis of Calcutta is known to every student of Indian History, for Khetterpur (Kidderpur), Chanak (Barrackpore), Matiabruce (Garden Reach), Budge Budge etc., are all indicated on English sailing charts from 1651 onwards. The Bengal Pilot Service was constituted by the East India Company on 14th July 1669 and Captain George Herron and his able colleagues have since then negotiated the bars and bends of the waterway of Calcutta called the Hooghly by the English and the Bhagirathi or Ganges by the natives.

The bore tides of the Hooghly are dreaded by the shipping community even today as they are unpredictable in their advent. The metropolis of Calcutta was flooded in its low-lying parts occasionally when the bore tides rose above 25 feet. The river gave birth to the port and the port gave birth to the metropolis of Calcutta and not in the reverse order. Protection of their shipping was the first duty of the English after settling in Calcutta on 24th August 1690.

II

The security afforded by the construction of their Old Fort, named after the reigning monarch, William, in 1696, recommended the English to take up the erection of wharfs, docks and other facilities for their shipping. Jonathan Winder, who was for sometime the third member of the Council at Fort William, made a proposal for making a strong and *pucca* wharf or key before the Company's Fort in Calcutta on the river bank and this necessary work was recommended by the Court or Board of Directors of the East India Company to their Governor and Council in Bengal on 7th April 1708. The Directors of the Company wanted the wharf before the Fort Gate to be made so strong that it must "secure the bank from being eaten into by the river" and should afford protection to the shipping by planting a cannon as well.

The Fort William authorities took the Company's order into their serious consideration on 9th February 1710 and an immediate order was issued to proceed with the work, making a provision for a breastwork to plant a cannon. The whart was nearly completed by 16th October 1710, with the two ends pallisaded. Thus, Calcutta port's wharf, having a length of 1037 ft. 11 inches was ready on 10th December 1712 at a cost of Sicca Rupees 8373-11-3P; but the Fort William Council regretted that the strong drawbridge and crane at the end of the wharf was only nearly completed to work at all times of the tide on that very day. This forgotten wharf was the first milestone in the history of the Calcutta Port.

Forty-one ships (sloops) were engaged by the East India Company in their trade with Bengal between 1709 and 1718 and the year 1727 saw the shipping belonging to the port of Calcutta cross the 10,000 ton mark. The battle of Plassey eclipsed Surat, Bombay and Madras

ports, for the British Empire was taking its shape in Bengal. The shipping, therefore, grew rapidly from thirty vessels per annum to 40 or 50, with a corresponding increase in the tonnage handled by the port.

The erection of a dry dock in Calcutta was recommended by the Court of Directors of the East India Company on 28th December 1711. President Anthony Weltden of the Fort William Council was asked to consider "whether a dock ought to be made at or near Calcutta to careen and fit our ships". The work was not taken up till 1712. A design for the "dry dock was laid aside" as it was "not worth the Company's while" on 10th December 1712 as the large tank at the Dalhousie Square was secure for ships to lie in. A dock was constructed next to the store rooms to prevent the river washing away the bank in 1714. The Fort William Council ordered the *buxie* on March 7, 1715 to stake and turf the "dock by the storehouse and workyard for the vessels" at a cost of Rs. 7824-2-0. Wharfing the dock cost another Rs. 1067-9-0 in March 10,1716. The dock was not enclosed with a brick wall gate and not floored properly as it would have cost another Rs. 20,000. This dry dock was not equipped for making warships and the Dalhousie tank was converted into a wet dock with facilities for launching vessels.

Colonal Robert Clive, who won an empire for Britain at Plassey, informed a Select Committee in Bengal, on May 29, 1758 that Admiral Pocock, at his departure, had represented to him the necessity of having a dock for the reception of His Majesty's ships in case the squadron should winter here. The Admiral had justified the expense as the ships of war could be refitted at Calcutta rather than getting the work done at Bombay at great inconvenience and loss of time. The Committee readily agreed to Col. Clive's suggestion and ordered Capt. Brohier, the Company's chief engineer, Master Attendant and Deputy Master attendant to survey an eligible spot. The great Tank at Dalhousie Square was, therefore, converted into a wet dock in 1759, with the ditch on the southern side of the Fort sufficiently deepened into a canal, so that the boats coming to the Custom House found a safe place to lie in. The wet docks and the dry docks of the Dalhousie Square were removed in 1808. The Bankshall, Marine Store yard, and the dry dock erection in 1716 were situated to the south of the Old Fort William, the site of which is now occupied by the Bankshall Street, Bankshall Court and other Government Offices.

There was a pier at the Old Fort Wharf which was surveyed on 7th April 1766 and it was enlarged at a cost of Rs. 15,000, for two cranes were installed upon it for the great convenience and despatch of shipping and landing of merchandise. Thus, the Port of Calcutta had not only wet and dry docks at Dalhousie Square, but also mechanical handling plants a hundred years before the birth of the Port Trust.

The conversion of the Old Fort William into a Custom House in 1766 after the erection of the present Fort William between 1759 and 1782 covering the site of the village of Govindpur changed the venue of shipping activities further down-stream. The change of the Hooghly's navigation channel to the west bank left its left bank forlorn. The sinking of the James and Mary in 1696 and the formation of the Sumatra Sand resulted in the gradual formation of sandbanks on the left bank. The river withdrew from the left to the right bank, throwing the large chunk of alluvial land called the Strand. Thus the Strand Bank is the gift of the river Hooghly to Calcutta. The construction of the Strand Road was taken up by the Lottery or Calcutta Improvement Committee in 1820 and the shipbuilders of the Clive Street were obliged to shift their establishments to Howrah. The Strand Bank lands from Chandpal Ghat to Ahiritola were leased to the Port Trust on its formation by the Government in perpetuity. The ever increasing size of the sailing ships in the 18th century had called for construction of a harbour 49 miles below Fort William.

Khijiri or Kedgeriee had become too narrow for larger vessels to negotiate and a proposal for development of a harbour at Diamond Point was submitted to the Court of Directors of the East India Company by Benjamin Lacam, a Calcutta merchant. He was given an advance of 1000 sterling for starting the work, besides 300 acres of land at Channel Creek on 1st June 1776 at a rent of one pepper corn for the first ten years and Rs. 100 for the subsequent years payable on every 25th December.

Lacam could not build the harbour and docks as proposed due to unforseen developments after making the infrastructure. He was given compensation for his trouble after terminating the lease. The Company was bound to engage only British build vessels for its trade between India and England under an Act of Parliament and sloops were not allowed to be made in India. Smaller vessels for the coastal traffic were built at Bombay at a much lesser cost.

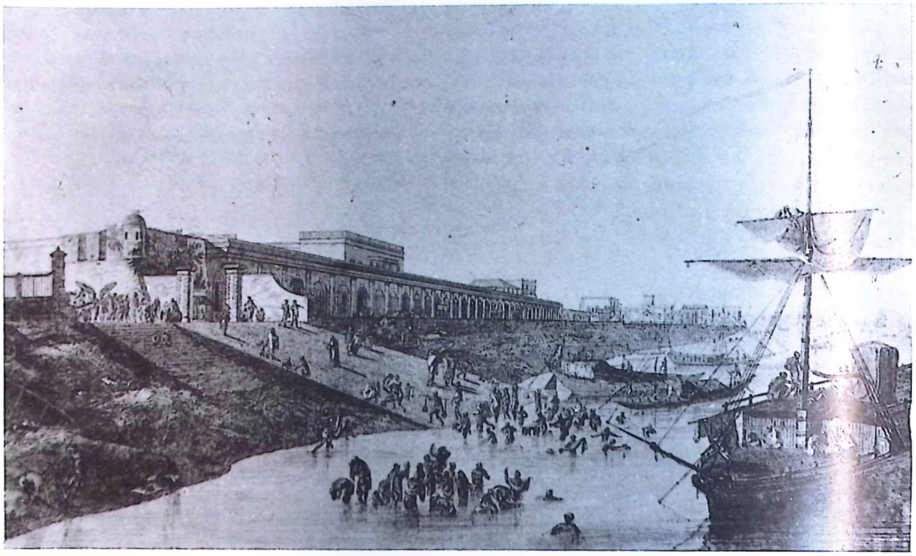
Diamond Harbour was developed by the government of Lord Cornwallis in 1789 at a total cost of Rs. 3,51,802-15-6. The Directors of the Company sent mooring chains, bridle chains, shackles, mooring swivels, iron hoops for buoys, anchors etc. from London. Two lengths of mooring chains, each chain 25 fathom with each link 2 inches in diameter and 6 inches long were laid. Six shackles about 70 lb. each were provided. There was one bridle chain of 8 fathoms. Double mooring swivels of about 6 cwt. were also provided. Thus the first harbour of the Calcutta Port was ready in 1789. The monthly establishment charge at the Diamond Harbour stood at Rs. 1647 in 1790. However, the new harbour, after serving the shipping in the Hooghly for 50 years or so was found to be inadequate with the advent of steamship.

The Bengal Chamber of Commerce in a representation urged the Government in 1853 to establish a port at Malta, where Bidyadhari, Atharabanka and Karatoya rivers joined the Hooghly. The Government of Lord Dalhousie acquired 25,000 bighas or 8.000 acres of land for the proposed port. At a cost of Rs. 11,000, land for a township extending over another 650 acres was also available on the spot. A municipality was constituted in 1862 to which the lands for the port and township were transferred. Mr. Ferdinand Schiller, Vice-Chairman of the Municipality and the partner of Borradaile, Schiller & Co., floated the Port Canning Land Investment Reclamation and Dock Company, for developing the port, docks, tramways, etc. The Government made a gift of 100 acres of land in the centre of the town for erecting wharves, jetties etc. Necessary funds were raised for proceeding with the work of providing moorings, buoys, etc. In 1865-66 the port was visited by 26 ships.

The improvement in the navigation channel of the Hooghly did not warrant the shipping to use the port at Canning in the next five years. The Port Canning Land Investment, Reclamation and Docking Company went into liquidation in 1870, the year in which the Calcutta Port Trust was ushered into existence. The township and the port were named after Charles John, Earl of Canning, the first viceroy and Governor-General of India. The port was officially closed in 1871. This forgotten port is today served by the Canning-Sealdah line of the Eastern Railways.

The Port Canning scheme was implemented when there was a deterioration in the navigation channel of the Hooghly. Modern technology was pressed into the service of the river and extensive dredging was undertaken in 1866-67. A far off port at Canning was not liked by the shipping interests and once more the shipping scene changed to the site of the Old Fort William. A continuous wharf from Clive Ghat to Chandpal Ghat with screw pile jetties were projected by private parties, but the Government constituted a River Trust in 1863 to take up the work on its own hand. When the Commissioners for making Improvements in the Port of Calcutta (Port Trust in short) were appointed on 17th October 1870 under the Calcutta Port Improvement Act of 1870 by Sir William Grey, Lt. Governor of Bengal, they inherited six screw pile jetties (four in working condition and two under construction), six cranes and four sheds for the accommodation of the sea-going trade. The subsequent history of the Port of Calcutta is well known.

We have deliberately omitted to mention the shipbuilding activities in the Port area conducted by Col. Henry Watson, James and Robert Kyds and others on the Calcutta side as it requires time to elaborate it.



3. Bathers at Old Fort Ghat : 1786
by Thomas Danniell

4. View from the Esplanade : 1792
by James Maffal

ENTRENCHMENT OF COLONIALISM

Bhaskar Chakrabarty

In Calcutta's transformation from a small weavers' settlement into a premier centre of Eastern India's trans-oceanic trade, the port on the river Hooghly was the catalytic agent. As the gateway to the large eastern Indian hinterland stretching upto the foothills of Assam in the north-east and the Gangetic North Indian plain to the west, it was the creation of the British. Its increasing importance since the middle of the eighteenth century was inevitably linked with the early consolidation of British power in Bengal. However much nationalist sentiments inspire our historians to emphasise the pre-colonial beginnings of what later emerged as the 'second city of the British empire', the British connection stands out prominently. Calcutta developed in the way the British shaped its growth and its port catered to a region which experienced from an early date 'the domination effect' of British colonial interests. By the late eighteenth century, the European World economic system, through the agency of the English East India Company, turned the rich Mughal Subah of Bengal into its periphery. It was from Calcutta that this transformation was largely directed. From this perspective, it is easy to interpret the rise and development of Calcutta Port as an aspect of this transformation.

The pre-eminence of the Calcutta Port since the mid-eighteenth century is inconceivable without the decline of the Mughal port of Hughli or even Surat in the west coast. Calcutta's rise was accompanied by a major disruption in the existing structure of intra-Asian trade in the Indian Ocean. Political instability in Turkey, Iran and India in the early eighteenth century was a disaster for India's West Asian trade based in Surat with which much of Indian trading activity all along the Indian coastline was linked. Even the Indian merchants of Hughli in Bengal had maintained their connections with the Red Sea - Persian Gulf region through Surat based shipping. The Europeans too operated within this framework and sailed between Europe and South East Asia by touching at different nodal points on the western Indian coastline.

By the time the English Company became the rulers of Bengal, this structure of Indian Ocean trade had already collapsed. The possibility of its revival, however, was ruled out by a re-orientation of India's foreign trade towards China with its final destination in Europe. In the end, trade with Britain began to dominate India's international economy, which came to be centred around the ports like Calcutta or Bombay.

II

There is, of course, a navigational aspect to Calcutta's development as a Port town, manifested as it had been in a downstream movement of trading settlements along the Bhagirathi-Hooghly channel of the Ganga since the sixteenth century. Over time, the Hooghly channel which had once been the main course of the great river became unavailable for bigger vessels due to silting caused by the larger intake of water by the distributaries flowing in the easterly direction. Navigating the Hooghly itself had its difficulties for its frequent bends and turns; for large cargo vessels, sailing upstream was made all the more difficult by the narrowing of the channel.

By the time Portuguese ships arrived in Bengal, in the early sixteenth century, establishing the region's first contact with the Europeans, the change in the Ganga river system had started taking its toll on the trading settlements in the upper reaches of the Hooghly channel. Saptagram or Satgaon, which was a flourishing riverine port on the confluence of the Saraswati and the Bhagirathi, increasingly became inaccessible for sea-going cargo ships. At the end of the sixteenth century the large Portuguese ships stopped at Betor, in the vicinity of later day Calcutta, to be fed with merchandise carried by smaller vessels from Satgaon. In 1570, the Portuguese shifted their factory from Satgaon to Hughli, a few miles down-stream. Before long, Hughli replaced Satgaon as the principal commercial outlet to the sea in this region.

Hughli retained its importance throughout the seventeenth century. After the expulsion of the Portuguese by the provincial Mughal authorities from this settlement in 1632, the Dutch and the English set up their factories a few decades later. More importantly, trade at Hughli encouraged the growth of a larger network of smaller trading marts and artisanal settlements further down-stream, all along the water front as far down as Sutanuti and Govindapur, which subsequently formed the nucleus of the English Company's port town of Calcutta. The migration of the Seths and Basaks from Saptagram to Sutanuti set the backdrop to the rise of Calcutta. The English before they settled in Calcutta knew that "of all the places to which ocean-going vessels could proceed, Calcutta offered by far the best anchorage". The Calcutta Reach had deep water along the eastern bank from Govindapur to Garden Reach capable of accommodating a large number of sea-going vessels.

Yet, in 1690, when the English Company decided to settle at Sutanuti, military considerations played an equally important role. In 1686 they had troubles with the Mughals at Hughli which persuaded them to look for a place which would be more secure. The choice fell on Sutanuti, where Job Charnock had taken refuge during his flight from Hughli. In 1690 when Charnock returned to Bengal on the strength of a new permit from Aurangzeb and Subahdar Ibrahim Khan, the English had decided to turn Sutanuti into their base. The commercial and navigational advantages notwithstanding, the place could be more easily defended by a naval force from possible threats of invasion by the Mughal army from the other side of the river. Not unnaturally, the English shortly built the Fort William to reinforce their defence against the 'Moors'. Actually, the politics of the founding of Calcutta lends a deeper meaning to the story of its rise at a time when the collapse of the Mughal empire coinciding with the breakdown of the pre-existent structure of India's international economy set in motion a long period of political and economic transition terminating in the rise of the British Empire in India and a thoroughly altered framework of her foreign trade.

III

For centuries before the Europeans came on the scene, Bengal had been integrated into a wider Indian ocean economy. Its maritime links with China, South East Asia, Coromandal Coast and Sri Lanka had been maintained through the sea-lanes of Bay of Bengal from the ancient port of Tamralipta. After a contraction of its oceanic trade around the seventh century, when Tamralipta ceased to be a meeting point of sea-going vessels, the maritime links were reactivated around the tenth century. During this intervening period, the arrival of the Arab traders on India's western coast had turned it into a counter where European and West Asian commodities brought by Arab traders from the Red Sea ports began to be exchanged for merchandise carried by Indian and Chinese shipping from the various eastern points.

A fresh stimulus for Bengal's oceanic trade came in the thirteenth century when substantial quantities of silver began to be imported through maritime channels in exchange for local manufactures, especially textiles. By the early sixteenth century Satgaon emerged as an entrepot, exporting cotton and silk goods and a certain amount of rice to South East Asian and West Asian Ports in return for treasure and luxury goods. In the process, its links with the ports on the Indian coastline were more intimately forged.

The Portuguese, who reached India's western coast in the early sixteenth century, stepped into this network. In pursuit of Bengal textiles, which they needed to exchange for south-east Asian spices, Portuguese ships took the Hooghly Channel to sail upstream to Satgaon. In 1514, they had set up a factory at Pipli in Orissa and in 1536 they were permitted by Sultan Mahmud Shah to carry on their trade from Satgaon and Chittagong. Later in 1579-80, the Portugeese settlement at Hughli was set up with Emperor Akbar's permission.

The Portuguese traders certainly introduced a system of armed trade by which commercial dominance was very often enforced through military power. Yet they operated within the pre-existent framework of intra-Asian trade. Instead of making an effective use of the Cape route, the Portuguese depended on the west Asian network for importing silver to India to barter for Indian textiles. Japanese silver procured in the south-east Asian ports added to this fund while Indian textiles were exchanged for spices in the south east Asian ports. Spices, Chinese porcelain and pearls and jewels brought to Hughli by Portuguese shipping were taken to north India by indigenous merchants through the overland trade routes. Despite the strong arm methods of the Portuguese, maritime merchants of Bengal maintained

regular contacts with the ports of the Coromandal Coast, sailing upto the Maldives. Portuguese control over the south east Asian spice trade, especially after their occupation of Malacca in 1511, however, made the Indian presence in south east Asia less important than in the western half of the Indian ocean. Gujarati muslim ship owners withdrew from Malacca and concentrated on the Red Sea trade encouraged by the overall political stability in the entire region. Portuguese domination notwithstanding, Gujarati traders continued to visit Aachin and Bantam and carried a considerable amount of pepper to the Red Sea ports, sharing to some extent the spice trade with the Portuguese. In the coastal trade in western India, the Portuguese officials' private trade depended heavily on Gujarati financiers and carriers.

In the seventeenth century, the Dutch East India Company undermined Portuguese dominance first in south east Asian waters and then around the Indian littoral. The Dutch also had a greater European orientation than the Portuguese who in their heyday in the late sixteenth century ceased to look towards the European market as the 'ultimate destination of their eastern trade' and Bengal's trade with Europe through Portuguese shipping was 'hardly of much consequence'. The Dutch made a more effective use of the Cape route and carried substantial quantities of Bengal textiles to Europe in return for Japanese silver that was available to them through the older south east Asian network. Yet as late as the early eighteenth century when European market emerged as one of the principal destinations of their trade in Bengal, the intra-Asian port to port trade retained its importance.

Dutch commercial supremacy in south east Asia, in fact, reinforced the structure of India's maritime trade that had emerged in the previous century. For Indian merchants, there was a further contraction of the south east Asian links, since the Dutch monopoly of the region's spice trade was more ruthlessly enforced. Shipment of textiles to the Red Sea and the Persian Gulf markets was now their main concern. Apart from the Gujaratis, Indian shipowning merchants at Hughli and Masulipatnam — mostly of the Shia Muslim community — maintained steady commercial contact with the Persian port of Bandar Abbas from India's east coast. They made adjustments with the overwhelming Dutch presence in south east Asia by relying more on the Bay of Bengal trading network comprising the Coromandel, Pegu, Arakan, Tenasserim and Aachin.

IV

For much of the early seventeenth century, English commercial activity in India was concentrated in the country's western coast line. Alike the Dutch and the Portuguese before them, the English carved out a space for themselves within the complex structure of intra-Asian trade from their base at Surat. Bengal textiles, of course, featured in the list of their purchases; but Masulipatnam was the farthest point in the east that English ships regularly visited. Political trouble at Masulipatnam in 1628 and the expulsion of the Portuguese from Hughli a few years later drew them towards Bengal. As they sailed upwards from Balasore on the Orissa coast to Hughli, the English came to acquire a major competitive advantage over the Dutch. In 1650, Shah Shuja, the then Subahdar of Bengal allowed them exemption from customs and transit duties on annual lump payment of 3000 rupees. There was, consequently a substantial expansion of their trade in the region. The English private traders including the free merchants, who were not attached to the East India Company, took full advantage of this privilege to consolidate their position in the province's sea borne and inland trade. In the procurement of coarse textile — a mass consumption item — Coromandal lost its importance to Bengal. The growth of English trade in Bengal was briefly interrupted by the Anglo-Mughal conflict at Hughli in 1686. But soon in 1690 normalcy was restored and the settlement in Calcutta was established.

Calcutta's development as a port town in the eighteenth century was, to a large extent, facilitated by a re-orientation that the English brought about in the overall direction of India's maritime trade from the west Asian trading zone to the east against the backdrop of the political crisis in Mughal India, Safavid Iran and Ottoman Turkey. With the progress of the eighteenth century, this entire process became linked with the increasing importance of Europe as the final destination of this trade. There was at the same time a remarkable development of Calcutta based English private shipping which turned the new port town into a bustling trading centre.

In a sense, the expansion of the English owned Calcutta Fleet in the course of the eighteenth century was an index of the town's commercial transformation. Roughly between 1709-10 and 1722-23, the number of

ships in the Calcutta Fleet rose from ten to forty. After a slight decline between 1730s and 1750s, a renewed spurt came in the 1760s so that the number of English private ships using the Calcutta Port went up to 128 in 1783 and to 591 in 1791.

In the early part of the eighteenth century, however, the Calcutta Fleet operated within the pre-existing framework of intra-Asian trade directed largely towards the western Indian and Persian Gulf ports. English ships carried Bengal's textiles, sugar and silk to Gujarat and western Asia and returned from there with west Asian luxuries, Gujarat cotton and Malabar pepper. Even the Indian merchants used these carriers after the collapse of indigenous shipping at Hughli. By the late seventeenth century the Hughli Fleet, owned by Mughal aristocrats, had undergone a decline and made way for Gujarati vessels which provided the merchants of Bengal with alternative carriers. But at the turn of the eighteenth century the Gujarati ship became an infrequent visitor to Bengal. The decline of Surat, so poignantly described by Professor Ashin Dasgupta, as a consequence of the contraction of west Asian trade due to political upheavals in the entire trade zone, spelt disaster for Gujarati muslim shipping. Political instability in Gujarat and north India cut off Surat from the production centres of its hinterland and troubles in the Persian Gulf - Red Sea area deprived it of its most lucrative markets. As Bengal's textiles lost the west Asian market, the Indian merchants who had hither to nursed the Mughal port of Hughli, opted for the British shipping network based in Calcutta to convey their merchandise mainly to the Bay of Bengal ports while English shipping was redirected towards China and south east Asia.

Even Bombay, which replaced Surat in the second half of the eighteenth century, took the major trade of the west coast towards China with Surat emerging as a collection point for raw cotton for shipment from Bombay for China. But the English political triumph in Bengal ultimately made the trade from Bombay far less important than the booming trade from Calcutta in the eastern seas. In fact, financing the China trade became a much easier proposition after the political transition in Bengal. Following the transfer of Dewani in 1765, a portion of Bengal revenue was remitted by the Company to their agents at Canton to buy Chinese tea for the European market. With the eviction of Bengal textiles from European market by low priced British factory products, the importance of Chinese tea as a medium of remittance of the accumulated private wealth of the English in Bengal was more keenly felt. Bullion from Bengal was initially the barter for Chinese tea and silk until opium emerged as a substitute accounting for the imposition of the Company's monopoly over Bihar opium in 1773. Alongside, English trade with Malaya and Indonesia also gained some importance, as Calcutta's ships on their way to Canton made stoppages there to exchange Bengal's commodities for pepper and tin destined for the Chinese markets.

At the close of the eighteenth century, English voyages in south east Asia were made easier by the decline of Dutch shipping, undermining their ability to control the sea lanes towards China. From a fleet of 124 ships in 1674, Dutch shipping steadily fell to 30 in the 1770s, with the result that even Batavia came to depend on English ships for its imports from Bengal. Earlier in the 1750s, the Dutch had retreated from the western Indian coast. Surat, although in a declining state, passed under English control after its occupation in 1759, followed by similar reversals for the Dutch in Bengal and the Coromandel Coast.

V

It was in such circumstances that the merchants of Bengal opted for the English shipping and trading network in Calcutta. The option turned into dependence as the English, aided by political power, systematically "rearranged" the hinterland of the Calcutta Port. Even before the political transformation in the late 1750s, much of the success of English owned shipping was indebted to the collaboration between English private merchants and the Indian traders of the hinterland. While the sea faring Muslim shipowners of Hughli went into decline, the predominantly Hindu merchants of the shore opted for the English network. Apart from superior speed and firepower of the English ships, which ensured quick passage of merchandise and better protection against piracy, the privileged position of the English Company in Bengal, reconfirmed by the *Farman* of Emperor Farrukhsiyar in 1717, drew the Indian merchants towards them.

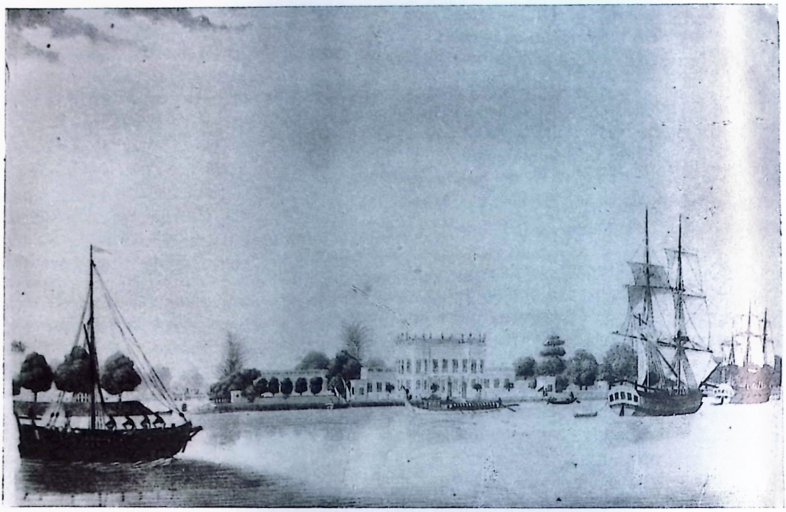
Exemption from customs duties that the Mughals granted to the East India Company was grossly abused by its officials for the benefit of their private trade. Some of the Indian traders who became tied with the English — such as the famous Punjabi Khalri Omichand — were also beneficiaries of this abuse when they

employed Englishmen as their fronts to evade taxation. Customs exemptions were sold by the Company's servants by way of assuming ownership of Indian goods, pulling Indian business to the English stronghold in Calcutta. This misused privilege enabled the English private traders to undersell their competitors in the market for Bengal goods around the Indian Ocean. An important factor in the more intimate forging of ties between Calcutta and its early eighteenth century hinterland, the privileges enjoyed by the English also told upon Indian shipping even on the river which began to be dominated by English boats much before Plassey.

In the end, Calcutta's growing stature as a port was conditioned by the establishment of British control over its hinterland in the course of the eighteenth century. Once political power was achieved by the Company in Bengal in the late 1750s, such controls deepened further leaving behind its casualties even among those local trading groups who had been their collaborators for sometime. Much has recently been written about the importance of this mercantile collaboration in the making of British Empire; it is, however, often forgotten that in 1757 these collaborators had a brilliant past behind them. A more discerning eye could easily see the portents of the future in 1753 when the English company in an attempt to impose its control on the supply line of commodities, dispensed with the intermediary *Dadni* merchants. This was perhaps the first major calculated rupture in the complex cobweb of interdependent relations that had defined the space of the European traders in the pre-colonial commercial system. The Europeans could not make do without a whole range of people including intermediary traders, money changers and creditors, big or small; political power enabled the English to outgrow this dependence.

The discontinuance of the *Dadni* system enabled the English private traders to consolidate their position in the regional economy more strongly than earlier. The *Dadni* merchants, who were responsible for procurement, mediated between the Company and the artisans scattered all over the region. Though collaborators of some sort, they always retained a degree of independence. They almost disappeared from the scene by the 1780s after the Company discarded the *Dadni* system in preference to direct dealings with the artisans through its agents and commercial residents. The latter were private traders themselves assisted by Indian *Gomostas* or clerks without any independent standing and therefore were more amenable to control. Before long, this mechanism of control was reinforced by an attempt to bind the textile weavers within a monopsonistic arrangement. In a relatively competitive market, the *Gomastas* often employed coercive techniques to preempt artisan labour through a rigorous method of redemption of advances. In view of the company's practice of underpricing purchases, the recipients of advances were very often induced by other trading groups into secret dealings, especially at times when prices in the open market were rising. Hence, a series of regulations were introduced between 1762 and 1789 to prevent 'interlopers' from undermining the Company's control over their 'registered' weavers.

In this emerging context of early colonial rule in Bengal, the characteristic relationship between British and Indian merchants became that of 'master' and '*banian*'. Indeed , the master had to depend on his *banian* in many ways and the latter also made enough money. But that did not alter the basic framework of what was essentially an unequal relationship. Realising that the English private traders were in a politically privileged position, Indian merchants used them as their fronts by entering into a sort of partnership in which the Englishmen often lend their names by charging a fat commission, while Indians provided capital and enterprise. Even when the master was an important official-trader, the *banians* still provided credit and managed their business with better knowledge of the local conditions. Some of them, such as Harry Verelst's *banian* Gokul Ghoshal or Krishna Kanta Nandi, who was also *banian* to Warren Hastings, were men of considerable wealth and influence. And few of them in the early nineteenth century like Motilal Seal or Ramdulal Dey achieved distinction by promoting partnership enterprises with British firms. Theirs was however a different form of Bengali entrepreneurship which made an abortive attempt to challenge the dominance of British private capital. Nevertheless, the Bengali *banian* was essentially a transitional figure, prospering as a group at a time when the English still depended on Indian skill and capital, but whose position declined steadily since the late eighteenth century. Their indissoluble bond with British private traders ruined them when the spendthrift mismanagement of their 'masters' and 'partners' led to bankruptcy and business failures. Even the more successful entrepreneurs like Motilal Seal or Dwarakanath Tagore ultimately failed to escape this fate.



5. The River : 1800
by James Maffal

6. The Botanic Garden House : 1819
by James Baillie Fraser

VI

The consolidation of British private trading interests in Agency Houses brought about this change. Beginning in the late eighteenth century as a business organization, in which Company's servants pooled together their capital, their dominance in Calcutta's business world was accentuated by the abolition of the Company's monopoly in 1813. Their ranks swelled by a larger number of free merchants, who as representatives of British manufacturing interests, invaded India with British piece goods, pushing the Bengal textile industry to the wall.

From their base in export-import trade the Agency Houses diversified into other areas, the most important being investment in indigo plantation. With changes in the commodity structure of Bengal's export trade, indigo as well as other agricultural products replaced textiles as the principal export items and solved Bengal's balance of payments problems arising from the increasing importation of textiles and cotton yarn. However, international fluctuations in the indigo trade and speculation in indigo produced a structural crisis in the Calcutta business world that swept Bengali enterprise off its feet between the Agency House collapse in the early 1830 and the fall of the Union Bank in 1847.

The *Banian's* excessive dependence on the British connection in the export-import trade was the main reason for their undoing. The Marwari cotton merchants and *shrofs* of Burra Bazar, who were firmly entrenched in inland trade and '*bazaar*' banking with links with the up-country credit network, eventually carved out in contrast a space in Calcutta's commercial world in the late 19th century. So did the 'guaranteed brokers' of the European managing agencies which came up during the reorganization of British business in the second half of the 19th century. Successors to the Agency Houses of the earlier period, the Managing Agencies were deeply involved in export-import trade, yet retaining a closer link with the parent concerns in England. They functioned from a stronger capital base to promote a wide range of export-oriented industries and plantations. The inter-continental telegraph communication controlled from London imparted further strength to the Managing Agency houses in forward trading. Together with the British banking and insurance firms, they maintained a 'collective monopoly' in the regional economy which lasted till the First World War. Afterwards Marwari enterprise of the '*bazaar*' started making inroads into the hitherto exclusive preserves of the Managing Agencies.

During the high noon of the British Empire in the later half of the nineteenth century, British domination over the regional economy, originating in their control over the new structure of Bengal's international trade through the Port of Calcutta, reinforced the system of export-led exploitation. It had started in the late eighteenth century. Accumulation of capital had found passage to London through the multi-lateral trading network of the Company and the private traders linking Calcutta with Canton and London. Rapid expansion of Calcutta's export-import trade in the nineteenth century, which was almost totally tied with Britain, look place within the broader framework of an altered commodity composition of this trade and consistently produced an export surplus that was much larger in value than that of either Bombay or Madras. Calcutta's large merchandies export, primarily in agricultural and semi-finished producrts, produced a favourable balance of trade often offset by official and private remittances to Britain on account of savings, business profits of British owned companies and service charges for British banking and insurance houses, apart from the straightforward political tributes extracted as 'home charges'.

It goes without saying that such 'unrequited export surplus' was a function of British imperialism and was built into the expanding commerce of Calcutta and its Port since the early part of British rule. Undoubtedly this process of migration of wealth affected other regions as well. As Professor Amiya bagchi has convincingly argued, the port of Calcutta and its eastern Indian hinterland, dominated more stringently by British capital for the early establishment of British rule in the region, generated the largest export surplus, exceeding by 1896-97 'the export surpluses of all the regions put together'. The export surplus from Bombay was always much less than that from Calcutta, which to some extent accounted for the differential rates of capital accumulation between the two regions.

In fact, by the 1920s Bombay was producing an import surplus, which was organically connected with the growth of an Indian capitalist class around the textile mills of Bombay and Ahmedabad. Even in the late nineteenth century when exports from Bombay were growing at an equally fast rate, an important part of the

export cargo consisted of cotton twists, yarns and coarse cloth directed mainly towards China. The independent link that the Parsi *Shetias*, the Bengali *banian's* counter parts in Bombay, maintained with China earlier in the century by exporting raw cotton and opium, was put to more profitable use when Bombay cotton mills were set up. On the other hand, Gujarati enterprise, which had survived in western India the British domination in the maritime trade of the region by retaining a space in the inland trade and small town credit networks, transferred their profits from the raw cotton boom of the 1860s to manufacture of textiles. There is no denying that the relative burden of the system of export-led exploitation was heavier on Calcutta which eventually made for significant differences in the levels of indigenous capitalist and industrial development between the two regions.

VII

It is a truism that this elaborate mechanism of export-led exploitation made the Calcutta Port so exceedingly important to the British since the inception of colonial rule. Yet the development of adequate infra-structural facilities in the port had to wait for the establishment of the Calcutta Port Commissioners in 1870. That of course coincided with a new thrust in India's international trade emanating from the completion of the basic railway network. Until then, despite a substantial expansion of Calcutta's oceanic trade, the facilities in the port remained somewhat primitive in the absence of properly constructed jetties and docks.

In the early colonial period, the main objective of the port administration, which was entrusted with the Marine Establishment of the Company under a Master Attendant, was to co-ordinate the movements of ships in their hazardous sails on the river. The Master Attendant was responsible for providing pilot services to the sea-going vessels. He also conducted regular surveys of the river to report on its navigability.

From the middle of the eighteenth century, the absence of docking facilities became a major concern as ships had to be taken to Bombay for repair. A dry dock was first built in 1790 near Bankshall Ghat. Already in 1781, the Company had apportioned a plot of land to Colonel Watson for the construction of wet docks at the southern end of the port. Watson had set up a marine yard at Kidderpur and in 1781 commenced work on the construction of the wet dock before a legal dispute with the family of Gokul Ghosal compelled him to abandon this project. Watson subsequently devoted his attention to the shipyard in which a few ships were built before his retirement from business. After Watson, there were several attempts to build a ship-building industry in Calcutta, but they stood no comparison with the shipbuilding activity in Bombay under Parsi enterprise. In the early part of the nineteenth century, however, India built shipping had to leave the field to English shipping interests.

In the 1820s, several plans were discussed for the construction of wet docks in Calcutta and Diamond Harbour; but nothing came of these proposals. The devastating cyclone in 1842, which damaged the ships anchored in Calcutta Port, once again revived the discussion. The issue of modernising the port was side tracked by an abortive attempt to establish a new port on the Matla in the 1860s. The resultant Port Canning scheme was intended by its promoters to provide an alternative outlet for trade in view of certain predictions about an early death of the Calcutta port from the silting of the river — a problem that had ruined Satgaon on the same Hooghly channel three hundred years ago. But Calcutta by then had become too important for the British to be dispensed with so easily. Confirming the pessimism of the opponents of the Port Canning scheme, the satellite port on the Matla failed to divert traffic from the Calcutta port and the government proceeded to set up the Port Trust to ensure a more efficient management of the system that had given the British empire in India its solid foundation in commerce.

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REALM OF IMPERIALISM

Arun Bandopadhyay

The history of the Calcutta Port is inextricably connected with the economic transformation of India in the nineteenth and twentieth centuries. If the Calcutta Port is the creation of the English East India Company in the context of the early colonial economic experience of the country, its 'modern' beginning can be traced from the middle of the nineteenth century in the imperial framework of the Raj.

From whatever historical perspective we see the facets of Calcutta's past, the colonial economic aspect of the City's development can hardly be ignored. Calcutta was a colonial city and a metropolis at the turn of the nineteenth century. It was also the most important centre of Indian trade and industry. It remained as British India's imperial capital till 1911. The problems and prospects of Calcutta's economic experience in much of the nineteenth and twentieth centuries are, therefore, connected with the regional and national economic development in the colonial and post-colonial contexts. Calcutta is taken here both as a fact and a symbol of economic transformation and the Calcutta Port its main conveyor.

It is better to begin with the fact and the symbol than with the instrument. The years from 1830 to 1890 are regarded as a period of transition in the Indian industrial scene, a period in which the horizon of economic activities changed radically. It was also a period of major overhaul and transformation of Calcutta and its port.

By 1830, industrial processes had developed to a great extent in Britain with significant technological innovations in industries like cotton, coal, iron and steel and the newly found railways; but in India the latest technologies had little impact. Thanks to the pioneering efforts of Jessop and Company and similar other concerns, some technology was imported and successfully implemented in India by 1830. However, the overall effect remained very limited, because of the persistence and deepening of the colonial roots. Most of what was introduced came as a product of official concern, civilian and military. Major private and official investments in industries along 'modern' lines were still lacking in India. It was as if industrialization reached the banks of the Hugli only through the operation of a fair number of steam tugs in the Calcutta harbour in the early 1830s, but it did not extend into the country.

The situation gradually changed from the middle of the nineteenth century. With the fall of the Agency Houses in the 1830s and the near-collapse of the Bengali merchant class in Calcutta in the 1840s, there came a gap to be filled in quickly by the Managing Agency System brought from Europe. As Radhe Shyam Rungta writes, "the managing agency system became the most generally accepted way of running business corporations in the country "since the 1860s. It provided an institutional setting in which entrepreneurial decisions were made. The managing agents provided a wide range of services in the fields of marketing, purchasing of machinery and stores, research and accounts, and even assisted in finding finance. Often the managing agent took initiative in starting a company and holding a portion of its share. They were major labour contractors, as Bird and Company did for the East Indian Railway in the beginning and for the Calcutta Port subsequently.

European capital and initiative brought by the Managing Agency system transformed Indian industrial activity in limited areas, but in a novel way. Consequently, the modern jute, coal, tea and other plantations industries developed in eastern India, while cotton mills grew up under novel indigenous leadership in western India. Finally, railways were introduced in India from the middle of the 1850s through private European initiative with official encouragement. The system of subsidies, known as 'the guarantee', ensured a minimum return of 5 per cent to the investors.

The nationalist historians like R.C. Dutt criticized this policy of government encouragement (i.e. the guarantee) and called it a wholesale surrender to the manufacturing interests of England in the heydays of

Industrial Revolution. Historians like W.J. Macpherson question this unilaterity of explanation and find the government motive rather complex. Nevertheless, Macpherson admits that "the government wanted railways for social, economic or perhaps merely military reasons. To some extent it was also influenced by the commercial and manufacturing interest."

Thus the period from 1860 to 1890 saw rapid improvements in India's "limited" industrialization, despite the continuance of the so-called conditions of free trade and the lukewarm official attitudes which preferred the promotion of British industrial interest over the Indian. Calcutta was the symbol of this change and its instrument Calcutta Port was, throughout the nineteenth century, the point of largest overflow of exports from India as well as imports into the country, except the 1850s and 1860s when Bombay temporarily overtook it. The new items added to the list of its exports were tea, raw jute and more and more jute manufactures from the 1870s and 1880s onwards. Simultaneously, Calcutta was the *entrepot* for imports of cotton piecegoods and other manufactures into its hinterland, which comprised Assam, Bengal, Bihar, Orissa, most of modern Uttar Pradesh and Central India and initially British Burma and parts of the Madras Presidency as well.

However, as Professor Amiya Kumar Bagchi writes, "most of these exports and imports were controlled by British firms from the point of their entry into Calcutta and, in the case of such commodities as jute, tea, opium, mica and manganese, from the point of production or extraction as well". This predominantly European interests were looked after by the Bengal Chamber of Commerce which "had practically no Indian members before the First World War." The limited but rising Indian interests were represented by the Bengal National Chamber of Commerce during this period. The beginning and development of the modern phase of the Calcutta Port till the First World War should be studied in the context of this economic transformation of Calcutta at large.

II

The spectacular improvement of communications by the introduction of railways, steamships, canals, telegraphs and cables was made in the 1850s and 1860s. It was followed by the revolutionary change in marine communication with the opening of the Suez Canal towards the end of the year 1869. It shortened the voyage between England and India by 6500 kms, giving an impetus to the use of steam vessels. Between 1854 and 1864, the total sea-borne trade of Calcutta had more than doubled from Rs. 19.13 crores to Rs. 40.53 crores. The nucleas of the Calcutta Port, the Marine Establishment set up by the East India Company as early as 1758, was extended to include a wharf for berthing of vessels and cargo operation, a marine yard at Kidderpore and a dry dock at Bankshall Ghat, while the construction of wet docks was actively considered. However, by the 1860s, there was a growing awarness that the commerce of the country was limited by the terminal facilities of the Calcutta Port. Thus came the idea of "Trust".

The idea of the formation of a River Trust was first contemplated in 1863. The then Lt. Governor of Bengal had asked for it with the Government of India while the Bengal Chamber of Commerce strongly favoured it. In 1866, the Bengal Legislative Council passed an Act, forming the first River Trust and making the Port a Department of the Municipality under a sub-committee of Justices. However, the arrangement did not satisfy the mercantile community of Calcutta and the River Trust itself failed within sixteen months of its formation.

After this failure, the construction of four screw-pile jetties with cranes and sheds for the accommodation of sea-going trade was taken up in 1867 by the Government. Professor Nilmani Mukherjee, the author of *The Port of Calcutta*, writes; "The jetties may be said to have begun the second identifiable period in the history of the Port. From now onwards, import trade was no longer subjected to clumsy handling ... but was ordinarily handled at the jetties, with the exception of salt which was taken by boat to the Salt Golahs at Salkia on the other side of the river, and coal which was unloaded in Garden Reach." In 1869, the Government sanctioned the construction of two more screwpile jetties with sheds. However, the charges of the Port were high and the Calcutta Trades Association was not prepared to accept any enhancement.

Through the Act V of 1870 was created the Calcutta Port Trust with nine nominated members as a permanent and more or less independent body for Port administration. In the original constitution, the Indian mercantile community was not represented ; but in 1871 Baboo Durga Churn Law was made a member to rectify this mistake.

When the Port Trust began its work in October 1870, there were only four jetties in operation and a wharf, which accommodated 52 vessels with a total tonnage of about 48,000. During 1871-72, the number of jetties rose to six, which accommodated 143 vessels with a net tonnage of about 222,000. However, trade in Calcutta tended to be conservative with regard to the immediate use of improved port facilities and the jetties were not popular, particularly with the exporters. However, resistence became milder over time and work even during night was introduced at the jetties by 1875-76. The total length of wharves increased significantly to handle primarily grain, seeds and loose jute. The Budge Budge pertoleum wharf was opened in 1886.

The growth of the export trade of tea, an established industry in Assam and parts of northern Bengal, was a remarkable feature of the 1870s. To arrange for the increased volume of export, the Commissioners made a scheme for building a tea warehouse on the Strand Bank lands. The Bengal Chamber of Commerce, however, criticized the scheme as an interference with private enterprise. The opposition was slowly overcome and the Tea Warehouse at Armenian Ghat was made available from 1887. The port also built its internal railway connections and by 1893 the total length of its railways was 13.29 kms.

The Calcutta Port was passing through a period of depression during the 1880s. One cause of the depression was the dramatic fall in the value of silver, which itself was reflected in the violent fluctuations in the rupee-sterling exchange rates at the time. Confidence in the currency came to its lowest ebb and the mercantile community, particularly the import traders, were the hardest hit. Secondly, there seems to be a continued depression in the 1880s. Exports of linseed and wheat also fell off remarkably.

One of the important achievements of the Calcutta Port during this period was the construction of the Kidderpore Docks. It was the mercantile community of Calcutta which for more than 50 years had been insisting on the need of constructing docks for the conveyance of trade. The Lt. Governor of Bengal in a Minute of 1883 expressed the view that the existing accommodation at the disposal of the Port Commissioners would be utterly incomplete especially after the completion of the bridge over the Hooghly and the establishment of direct railway communications with Calcutta from the producing districts of north western provinces and central provinces, northern and central Bengal. Lord Kemberley, the Secretary of State, also stated in the same year that all reasonable accommodation should be provided for shipping for the extension of imports and exports, with which the railway traffic of the country was ultimately connected.

Act II of 1885 finally gave the powers to the Commissioners to construct docks at Kidderpore on the basis of the original scheme prepared by Duff Bruce, the Vice-Chairman of the Port Commissioners. It is interesting to note that a section of the mercantile community of Calcutta thought at this juncture that the building of a dock would be a great burden on the trade of the city as it would neither reduce the charges nor facilitate the turnaround at the port. The government dismissed the objection by the argument that without the docks the increased volume of traffic carried on the railways could not be economically handled or that the trade would go to other ports. The docks were declared open for traffic in 1892.

Initially, the docks were not much in use; there was opposition and some users even boycotted it. Only slowly the conveniences and efficiency of appliances of the dock began to be appreciated by the traders of Calcutta. The most important factor behind this change was the growth of export trade of coal, which rose from a nominal to an impressive figure. It rose to about 673000 tons in 1897-98.

The last twenty years before the First World War saw the improvement of the Calcutta Port in many directions. It was also a period of noticeable changes in the Raj's policy towards Indian industry and trade. In terms of India's economic experience, it was a period of transition in more than one sense. The first noticeable departure from the doctrines of *laissez faire* was found in the early years of the twentieth century. Lord Minto's Government adopted an important policy which clearly admitted "the system at present prescribed for the purchase of Stores does not in practice result in the maximum amount of encouragement which the Government could legitimately give" to the Indian industries. Secondly, the Committee to review and examine the store's purchase policy admitted that the government policy did not give the desired result. There was such hesitation on the part of the Indian manufactures to develop their industries "partly as a result of the absence of the continuity of orders which would justify the laying down of expensive machinery". Finally, the Committee noted that the Indian manufacturers were to supply an article equal in quality

to that obtainable in England; but it added that orders that were placed in India were largely "rush orders" or what is stated subsequently as infrequent orders in small batches.

It was no wonder that foreign export trade almost doubled during these twenty years, representing an annual increase of about 3.5 per cent. One noticeable change in the composition of foreign export was a ten fold increase of the manufactured jute in the thirty years ending 1912-13. There was also a rapid development in the foreign import trade, the remarkable feature of which was the enormous increase in sugar imports with the development of sugar industry in Java. There was also a significant enlargement of foreign and coastal trade of Indian coal during the period, "not because of normal trade reasons but because of a sharp rise in the price of British Coal". There was little scope for further expansion of coal exports. Indeed, there were indications that the internal demand for better qualities of coal for manufactures and railways would tend to overtake the supply and leave a decreasing margin of exportable coal.

Two other aspects of the coal shipments at the Calcutta Port should be noted. First, the Bird and Company got a contract to supply labour for coal handling in the whole of the Kidderpore docks, which was then extended to the handling of general cargo at the docks. Secondly, the Jessop and Company supplied the necessary technology for the adoption of Beckett's System for easy handling of coal at the docks. In 1901, the Company supplied a crane to the port of Calcutta "to equip the berth No. 20 on Beckett's System". The capacity of the crane was stated to be 8 tons in the subsequent references in Jessop catalogues. Five similar cranes were also supplied to the Port Commissioners in Calcutta (Arun Bandopadhyay, *The Story of Jessop*, p. 44).

The crucial political development having an impact on the Calcutta Port was no doubt the Partition of Bengal and the Swadeshi Movement (1905-8). We are concerned not with the political issues, but with the economic issues inherent in the creation of two provinces with Calcutta and Dhaka as their respective capitals. One effect of the Partition was the expected development of the port of Chittagong as the natural outlet for the export and import trade of East Bengal and Assam, despite the vehement criticisms from the Bengal National Chamber of Commerce. However, boycott of cotton goods had not any significant effects over the average value of cotton goods imported during the period, except in the year 1906. Sumit Sarkar has shown that the temporary decline in Manchester cloth sales had much to do with a quarrel between the Calcutta Marwari dealers and the British manufacturers over trade terms than on anything else.

III

The second important phase in the modern transformation of the Calcutta Port seems to have taken place in between the two World Wars. Significant changes occurred in India's economic experience during this period. The Calcutta Port shared much of this experience.

It has been generally accepted that the actual rate of growth of organised industry in India since the First World War was not neglgible. One analyst sums up the position in the following way :

> "Two interesting features of capital formation in India since the First World War should be noted. In the first place, the figures of paid-up capital reveal changes in the pattern of investment, consisting in a perceptible shift from transport, banking, plantations and mining to manufacturers. The comparatively high rate of investment in manufacturing industries was due to the extraordinary growth of certain new types of manufactures, such as chemicals, iron and steel, shipbuilding and engineering goods of various sorts. By contrast, established manufactures like jute increased at a slower pace than industry as a whole. There was a significant though not perhaps radical diversification and sophistication of industrial production... The second notable feature of capital formation from 1914 was the growth of Indian control in the private corporate sector. The Indianization of the private corporate sector was partial rather than complete; but at any rate the practical European monopoly of large areas of modern business and industry was brought to an end. Investment under Indian control — so far as the admittedly partial statistics indicate — grew considerably faster than European investment." (R.K.Ray, *Industrialization in India*, p.342)

The history of the Calcutta Port during this period should be placed and explained in the context of the above noted changes. The initial years of the First World War were, however, not very hopeful for the Port. The War seriously interfered with normal world trade and the operation of the Calcutta Port was naturally affected. The main factor of decreased traffic at the Commissioners' jetties was the cessation of imports of iron from German ports and from Antwerp. There was a remarkable decline in piecegoods and "all the other major articles of import like railway materials, machinery, cement, hardware and cutlery also showed a marked drop". There was a consequent decline in the demand of European liners for accommodation at the jetties. There was also a sharp fall in the export of coal. This was reflected in the Administrative Reports of the Calcutta Port from 1914-15 to 1918-19.

The post-war situation was different with a quickened pace of industrialization. For the first time Indian capitalists were strong enough to exert pressure on the Government. Improvement in trade conditions was slow but steady. In 1924-25, it was officially stated that the port regained the old pre-war figures of general import traffic while it exceeded these figures in the case of general export. These trends were subsequently disturbed by the onset of the great depression in 1929-30. However, throughout the 1920s the Port Commissioners generally favoured a policy of free trade rather than one of protection since they believed that a free trade policy would produce the highest and most varied development of trade through the port. But they had no objection to the imposition of customs duties for obtaining revenue.

One important achievement of the Calcutta Port during this period was the construction of King George's Dock at Garden Reach. The work actually commenced in March 1920. "Originally the scheme included the construction of 4 berths on the riverside at Garden Reach, and three large docks, Nos. 3,4, and 5, to connect the existing docks Nos. 1 and 2 at Kidderpore by a channel 10ft wide". The Dock was formally opened in 1929, but the immediate success of the new dock was tarnished by the most unexpected development — the economic depression. "The total traffic handled by the Commissioners during 1930-31 was 24% less than in 1929-30 and much of the accommodation in the port was lying unused". In 1931-32, the traffic further declined. Signs of recovery were seen from the year 1933-34. Heavy imports of rice from Burma in 1934 and those of iron and steel, machinery, Java sugar and Australian wheat in 1938-39 and the improvement in the shipment of coal, pig iron and manganese ore helped the process of revival of trade in Calcutta. The total tonnage of the Calcutta Port in 1937-38 was 8,939,755 tons, "the highest traffic figure reached since 1930-31". In the same year, night work at the Calcutta jetties was resumed.

When the Second World War broke out in 1939, it was thought that India would not be affected very much. However, the situation changed and India was deeply involved in the War by 1942. Initially the supply of varied materials to troops encouraged Indian industry. "The war effort under Government direction profoundly altered the structure of India's industrial economy. Important changes took place not merely in the *pace* but also in the *range* of industrial production in the large-scale organised sector under private enterprise". Of the total purchase of 172.3 million sterling made by the Supply Department of the War Resources Committee between September 1, 1939 and December 31, 1941, about 73 million was covered by engineering hardware and other miscellaneous products. At the beginning of the War, there were only 600 workshops capable of producing engineering components. At the end of the War, 1500 engineering workshops were supplying the government. The output of machine tools had risen from less than 100 a year to 350-400 monthly,

The iron and steel industries as well as the flourishing textile industry received great impetus from the War. It was generally assumed that the War had brought extra traffic to the Calcutta Port. As Sir Thomas Elderton, Chairman of the Port Commissioners, commented in the Administrative Report for 1945-46, the port was certainly busy during the latter part of the War years. However, the average traffic handled from 1940-41 to 1945-46 was only 7,436,846 tons per annum. This figure was less than the tonnage handled during any of the slump years between the two Wars.

From 1942-43, the working of the port showed greater evidence of the impact of the War. The total quantity of trade in 1942-43 was less than half of the previous year. Indeed, the indications were more dismal in the beginning. During the first four months of the year (1942-43) the total traffic handled was little more than the amount ordinarily handled in a single month. The Bird and Company, the labour contractors for the Port, became very short of labour during this time. The Japanese air raid in December 1943 marked the worst

impact that Calcutta and the Port suffered during the War. "Messrs Bird and Company's labour suffered heavily and for some time it was impossible to persuade men to work in the Kidderpore Docks". Situation positively changed only at the end of 1944 and the traffic at the Port continued to be heavy until the end of the hostilities. Thus for the Calcutta Port, the War years were of tensions and prospects of unprecedented character.

IV

The history of the Calcutta Port since Independence is part of the contemporary history and is not intelligible without an understanding of the changed character of the hinterland of the port during this time. In the nineteenth century Calcutta's hinterland had been reduced to a raw-material producing region, supplying the industrialized nations. However, in the late nineteenth century and in between the two World Wars the gradual industrialization of the region made significant contribution to the development of the port. The partition of India in 1947, no doubt, resulted in the loss of a sizeable part of Calcutta's hinterland comprising mostly of the rich jute growing districts of East Bengal (modern Bangladesh). Notwithstanding, the Calcutta Port remained the premier port of India till 1955, handling more than one-third of the total traffic of the country.

The coming of Independence made significant changes in the composition of the management of the Calcutta port. The Port Trust had an unbroken succession of British Chairmen till 1947; the appointment of the first Indian Chairman of the Trust took effect from April 1947. Simultaneously, the Act 36 of 1948 raised the number of Commissioners to twenty two, including a number of labour representatives for the first time. The system of contract labour (Bird and Company) came to an end and was replaced by departmental labour from April 1948. "The termination of the Birds' labour contract was a big change and it marked the end of an association which under varying conditions had endured for well over half a century".

In between 1947-48 and 1951-52, Calcutta's principal imports were salt, petroleum, chemicals, cement, asphalt, bitumen, lubricating oils, railway plant, machinery, and iron and steel. The principal exports from the port during the same period were coal, gunnies, jute, tea, bones and bone meal, iron ore, manganese and pig iron. Gradually, it was widely realised that if Calcutta was to play an effective role in the new export drive, an all-out effort must be made to accelerate the rehabilitation of the port.

Large-scale renovation, modernization and expansion programmes were, therefore, taken up. During the First Five Year Plan period, altogether Rs. 4.66 crores were received as loans from the government on this account. During the Second Five Year Plan, Rs. 19.9 crores were made available for the programme of development of the Calcutta Port. It was during the Third Plan period that the Farakka Barrage Project was approved and a Master Plan was drawn up for a deep water dock at Haldia for large oil tankers and bulk carriers. The Haldia docks system, through innovations in the subsequent plan periods, was destined to grow beyond its intended role of a satellite port handling mainly bulk cargo to relieve congestion upstream. It was to become the most potent component of the Calcutta Port system to play an important part in the development of the eastern region.

The history of the Calcutta Port for the last hundred years and more is, therefore, most chequered and full of challenges. The changes in the economic experience of the region, a process inextricably mixed with the development of Calcutta and its port, make the history more intelligible and absorbing.

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by Charles D'oyly

8. The River Front : 1835
by Charles D'oyly

NATIONAL CHOICES AND THE PORT

Deb Kumar Bose

Ports of a country are her links with the world outside as also indicators of the health of the economy. Fortunes of ports are determined by factors operating both at the national and international levels. Calcutta Port bears witness to the changing tides of history in India and her relation with the foreign powers. The essay reviews the development relating to the Port over the past decades and presents some conjectures about the prospects of the Calcutta Port.

II

After independence, there was a change in the pattern as also direction of India's foreign trade. Although the items of export remained unchanged for nearly a decade, mainly comprising of manufactures of jute and cotton, tea, coffee, oilseeds, mineral ores etc., the share of the United Kingdom in the trade was declining. Other countries like USA, European countries, Soviet Union and Japan were gradually emerging as strong partners of trade with India

The items of import however registered significant changes. Foodgrains assumed a much larger figure in import. Pent up demand for many essential items like machineries, iron and steel for replacement needs caused large imports of these goods at the end of the war. Such imports were handled by all the Major Ports situated in different regions of the country. With diversification in directions of trade and patterns of import, it could be appreciated that Calcutta Port would suffer to some extent. The share of Calcutta Port in total traffic declined from 43 percent in 1947-48 to 22 percent by 1965-66, as may be seen from Table-1.

This cannot explain the preceptitious fall in the share of traffic for Calcutta Port in the following years, relegating its position to 5th in the rank by the 70s which persists till now. While the total traffic in the Major Ports rose from 16 million tonnes in 1947-48 to 152 million tonnes in 1990-91, the volume of cargo handled by Calcutta Port system did barely exceed 11 million tonnes over the same period.

Table-1 shows the alarming state of affairs in the Calcutta Port as prevailing since independence. It is remarkable that while all the other Major Ports continued to handle larger and larger volumes of traffic, the traffic for Calcutta Port stagnated at a low level over all these years. Total tonnage of cargoes for all the Major Ports increased from 16 million tonnes in 1947 to 80 million tonnes in 1980-81. But the cargo for the Calcutta Port showed a reverse tendency. The tonnage of cargo crept from 1947-48 level of 7 million tonnes to 11 million tonnes in mid-sixties. Then it started to decline and touched the low at 9 million tonnes in 1980-81.

A number of measures were adopted to check the decline in traffic. Apart from improvement in mechanization of equipment, operations at Haldia Dock System reached a significant level. Containerization of freights at Haldia started gaining momentum. The result was reflected in a reversal of the trend of growth in the tonnage of cargoes accompanied by a redistribution of cargoes between Calcutta and Haldia Dock Systems. The total tonnage of cargoes under the Calcutta Port Trust, with cargoes of Calcutta and Haldia Docks combined, rose gradually to the level of 18 million tonnes. It maintained that level upto 1993-94. The figure of tonnage for Calcutta Port for the year 1993-94 at 18 million tonnes may appear impressive in relation to the low level of the earlier periods. However, the total volume of cargo for the Major Ports exceeded 166 million tonnes during the year, the percentage for Calcutta Ports hovering around 10 percent as in the previous years.

Among the possible reasons for the stagnation in the volume of cargoes handled, the technical factors have been examined at length by experts concerned with the problems of the Port. The draft at Calcutta Docks has been maintained at around 7 meters, accommodating the increasing volume of containerized traffic so far. A likely increase in the size of

containerized vessels may demand provision for deeper draft in Calcutta Dock in future. Larger vessels with requirement of deeper draft have been reaching Haldia Docks. As noted earlier, Haldia Docks have been assuming an increasing share of total cargo handled by the Calcutta Port Trust. Haldia-Budge Budge pipeline for transport of POL has certainly helped Haldia Docks to receive it in larger volumes.

Calcutta Port System has been able to overcome some of the long-standing problems of the mismatch between handling equipment at the ports of origin and destination. It has been possible to achieve some improvement in the turnround of ships at the Calcutta Ports with modernization of handling system and changes in the management method. While much remains to be done in respect to technical factors, thanks to the measures taken by the Port Authority, there has been at long last a break in the declining trend of cargo rising from a maximum level of 11 million tonnes during mid-sixties to 18 million tonnes by 1993-94.

III

It becomes apparent that technical factors do not go far to explain the stagnation in the volume of cargo handled by Calcutta Port. One has to look to other factors, particularly the economic factors for necessary explanation. The point that a Port's health will largely be determined by the level of economic activity in its hinterland is seldom disputed. What may be a matter of debate, however, is whether the same factor posed the major constraint for the growth of traffic in the Calcutta Port System. We shall examine the question here.

The hinterland of Calcutta Port comprises of the States of West Bengal, Bihar, Orissa, Assam and the north eastern States. Various accounts have already been given by analysts showing how the region's economy suffered most in the post-independence period in India. Apart from jute and tea, which earned maximum foreign exchanges even in the early years of independence, the mineral resources of the region offered a natural advantage in the economy. It was from such economic considerations that the British rulers established their industrial base in this region. It, however, led to regional disparity in the levels of development within India.

Removal of regional imbalance was one of the objectives of the Government of India after independence. It was considered necessary to provide some price advantages to the other regions in respect of essential raw materials like steel and coal in order to set them on to the path of industrialization. It was in this context that the Government of India introduced the policy for Steel Price Equalisation and Telescopic Freight Rates for coal and other bulk goods in 1957. In one full sweep the natural advantages enjoyed historically by the States in the Eastern region were removed. Since then the prices of steel and coal have come to be determined at administrative level ignoring the consideration for natural advantages. The new policy met with little resistance as there seems to have been a consensus prevailing about undesirability of regional imbalances.

Instead of depending on the free play of competitive forces for the growth of the economy after independence, the decision makers of India decided to develop the economy in a planned manner. Administered price for essential goods was a part of the strategy adopted in planning. Another important policy instrument was the Licensing for new investment in the country. The measure was adopted with a view to direct investment in priority sectors in keeping with the avowed objectives in the Five Year Plans.

The objective of removal of imbalance in industrialization between the different regions was served, it may be said, more than adequately. A realignment in the ranking of the States in terms of industrialization was not unexpected, nor unwelcome. What happened in practice, however, was entirely unexpected. The States in the Eastern region were relegated in the process to the lowest rungs in the rankings. The case of West Bengal serves as a typical example of the impact effected by the policy pursued.

In 1947, West Bengal had the highest per capita income. A comparative study by the NCAER published in 1967 showed that West Bengal's Net Domestic Product was higher than all other States excepting the Uttar Pradesh. However, U.P. was more than three times as big in area and almost two and a half times as big in population as West Bengal. In industrial production, she was next only to Maharashtra as presently constituted.

West Bengal's decline in the sixties was drastic. In 1961, the State came down to second place, next to Maharashtra, in per capita income. By 1966-67, West Bengal went to the eighth position among the States in per capita income. The index was reflective of a process

of what could be called de-industrialisation of the State taking place over the years. For, given a decline in prices of steel and coal in all States other than those in the Eastern region, accompanied by a rise in their prices for the latter as a result of the new policy, the industrialists found it profitable to choose the former regions for investment. The States in the Eastern region suffered most from the policy. Industrialists preferred to invest in the other regions the surplus generated by them from manufacturing activities in the Eastern region. Not only capital but also skilled manpower was attracted to industries in other regions. Industries in the Eastern region turned sick one by one. Only investment made in the Eastern region were by the Central Government in steel and engineering industries in the Public Sector. This was the result of decisions made by the Centre under Plan Programmes. Private Sector investment was marginal.

It needs be mentioned that the deficiencies in respect of infrastructure, power, or even work culture were not be considered as major constraints in this period. For, West Bengal power situation was good enough till 1971 when the first bout of severe load-shedding marred the scene. There was no complaint about lack of infrastructure when the Public Sector Steel and engineering plants were being installed in the States of the region.

IV

The Licensing Policy pursued by the Centre delt another blow to the prospects of industrial growth in the region. Controls over investment and import were introduced in the economy to direct scarce resources into priority sectors according to the objectives of the Plan to attain growth with equity. How the objective was frustrated by the nexus between the industrialists and the power that be came to be exposed in the Report of the Industrial Licensing Policy Inquiry Committee under S. Dutt in 1969. Dutt found that large Industrial Houses had successfully cornered a large share of the licenses for new industries for themselves without implementing them, thus pre-empting capacities to forestall other entrepreneurs from entering these sectors of industries. Not only was there a high degree of concentration of capacities among a group of large industrial houses as Dutt found, an apparent discrimination in the distribution of licenses between the regions could also be seen. The data in Table-2 will bear out that the policy has been continued over the following decades. The stance has been changed only recently after the Liberalisation Policy was adopted.

When an account is taken of the States comprising the hinterland for the Ports of Bombay, Madras and Calcutta, it is found that while in the States of West Bengal, Bihar and Orissa in the Eastern region only 26 per cent of the industrial licenses were issued to entrepreneurs in 1965, the share came down to 10 percent in 1987. There has been a steady decline in the percentage over the years. The analysis above shows that a near-stagnation in the volume of cargo handled by Calcutta Port System is better explained by the economic factors affecting adversely the productive activities in the Eastern Region.

V

The new Economic Policy adopted by the Government of India in 1991 however promise withdrawal of constraints to free competition in trade. Although the Licensing Policy has already been liberalized, it remains to be seen how the Steel Price Equalisation and Freight Policy are actually modified. There are indications that the entrepreneurs have taken note of the emerging prospect for revival of the economy in the Eastern Region. It augurs well for the volume of cargo for the Calcutta Port System.

However, when the economy of the hinterland of the Calcutta Ports revives, the technical factors may come in the way of Port System to reap full advantage of the prospects opening up. The depth of the draft and cargo handling system with which the Ports have been able to manage so far may not prove adequate in future. Container ships are likely to increase in size calling for deeper draft. Haldia Docks will be called upon to handle much larger volume of POL when the state petrochemical project is on stream. Serious attention needs to be paid to the problem of dealing with ships with larger DWT. The Calcutta Port Trust (CPT) has already been considering anchorages near Digha and Saugor Island. CPT will have to be prepared for a much bigger challenge than hitherto when the expected resurgence of economy in the hinterland takes place.

TABLE - 1: CALCUTTA PORT'S SHARE OF CARGO TRAFFIC

(in million tonnes)

Year	Total cargo traffic of Major Ports in India	Cargo traffic of Calcutta Port	Percentage share	Rank
1947-48	16.35	7.06	43.16	1
1950-51	19.20	7.53	39.23	1
1955-56	22.96	8.16	35.53	2
1960-61	39.50	11.15	28.22	2
1965-66	50.22	10.99	21.88	2
1970-71	55.57	6.40	11.51	5
1975-76	65.74	8.00	12.17	4
1980-81	80.27	9.51	11.85	5
1985-86	119.55	12.13	10.14	6
1990-91	152.55	15.24	10.00	5
1993-94	166.58	18.46	11.08	5

Major Ports:Calcutta, Haldia, Paradip, Vishakhapatnam, Madras, Tuticorin, Cochin, New Mangalore, Mormugao, Bombay, J.N.P.T., Kandla.
(Source:Planning Department,CalcuttaPort Trust)

TABLE - 2 : INDUSTRIAL LICENSES ISSUED TO STATES IN THE HINTERLAND OF PORTS

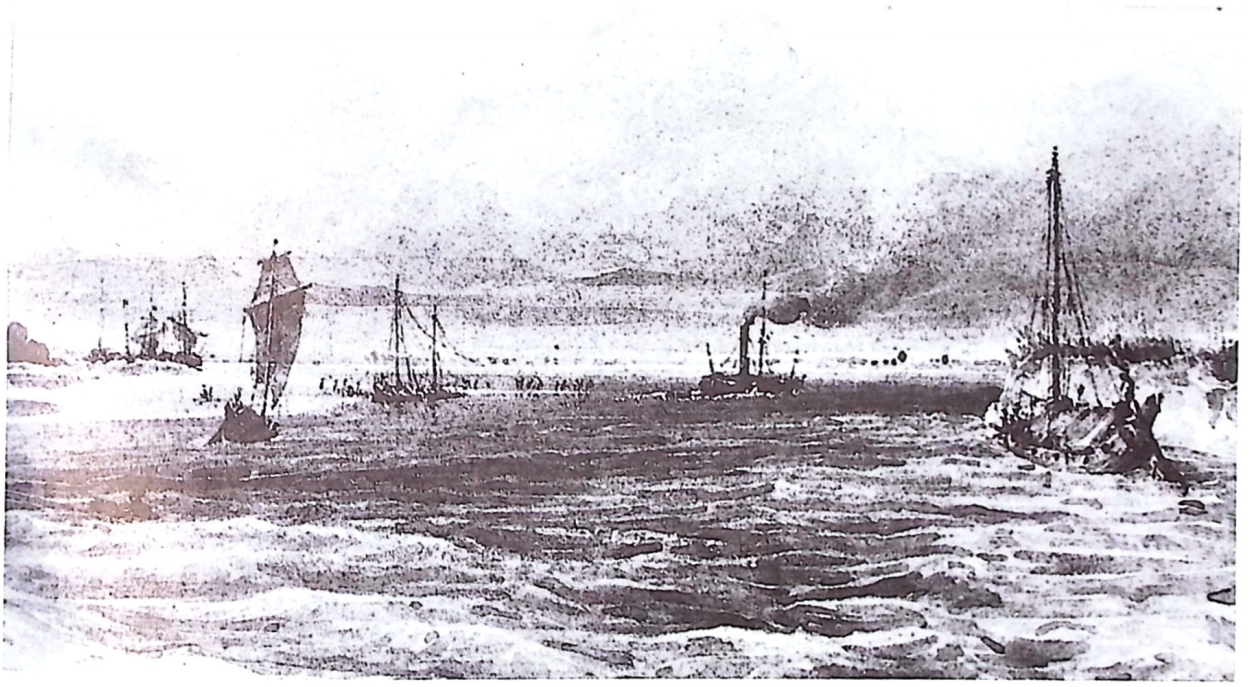
REGION PORT	STATES	NO. OF INDUSTRIAL LICENSES ISSUED 1965	1970	1980	1987
Western Bombay	Maharashtra, Gujarat, Punjab, Harayana, Uttar Pradesh, Madhya Pradesh	259 (51.29%)	219 (59.40%)	278 (62.78%)	237 (57.52%)

REGION PORT	STATES	NO. OF INDUSTRIAL LICENSES ISSUED 1965	1970	1980	1987
Southern Madras	Tamil Nadu, Kerala, Andhra Pradesh, Karnataka	113 (22.38%)	77 (20.98%)	130 (29.35%)	131 (31.80%)

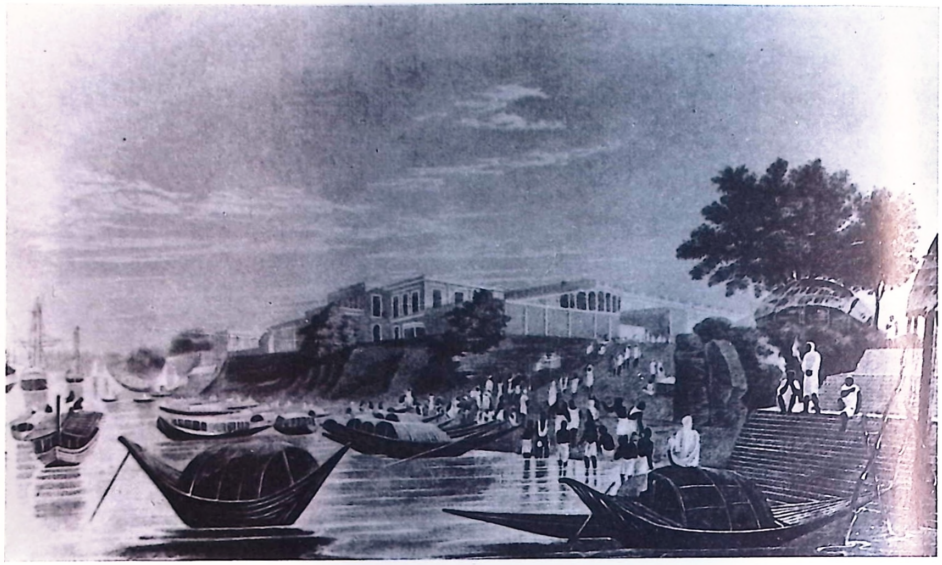
REGION PORT	STATES	NO. OF INDUSTRIAL LICENSES ISSUED 1965	1970	1980	1987
Eastern Calcutta	West Bengal, Bihar, Orissa	133 (26.43%)	72 (19.62%)	35 (7.90%)	44 (10.68%)

Compiled by Planning Department, Calcutta Port Trust.

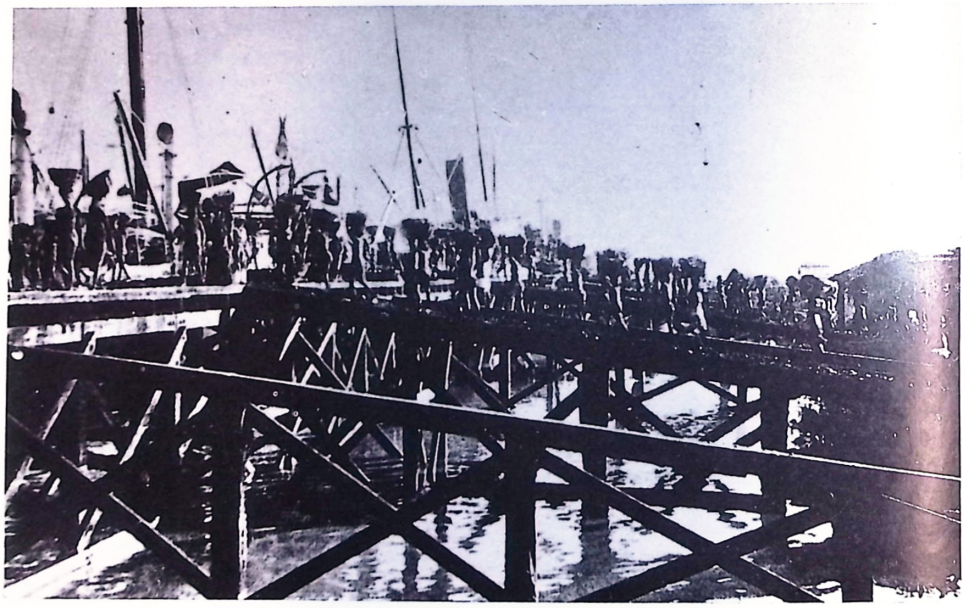
9. The River at Princep Ghat : 1841



10. Steamer and Sailing Boats : 1882
by Thomas Princep



11. A View at Chandpal Ghat
by James Fraser



12. Coal as Head Load

GRAND EXPECTATIONS : A REASSESSMENT OF HALDIA

Rabin Ganguly

In the context of progressive deterioration in the navigability of the Hooghly River and the consequent limitations in handling large vessels at the Calcutta Port, the idea of establishing an auxiliary Port at Haldia was born during the early 50's. The emerging Port of Haldia (Haldia Dock Complex of the Calcutta Port Trust) brought in it's wake in the mid-60's a recognition of the potentials of developing a port-based urban-industrial centre through establishment of large public and private sector industries around it. Setting up a port-based urban-industrial complex at Haldia was seen as an instrument for inducing growth in the relatively backward region of Midnapur district. Implicit was an objective to promote in due course a counter magnet to Calcutta Metropolis. The vision was rooted in the then widely accepted concept of Growth Centre. The logic of growth centre was believed to induce through a mechanism of 'spread' or 'trickle-down' effect economic development in the surrounding region aided and promoted by appropriate state interventions.

The concept of Growth Centre recognises several potential spatial development impacts, such as induction of a regional multiplier through backward and forward linkages of the growth centre industries, generation of employment opportunities for the regional labour force, containment of expenditure of income from the growth centre within the region, commercialisation of agriculture and diversification of non-primary activities in the region, interception and containment of migration of skilled manpower from the region, and acceleration in the process of inter-settlement interactions leading to an integrated and hierarchic settlement system. The intention of this paper is to critically assess the reality that has emerged within this backdrop. The issues highlighted in this paper are those observed till the latter part of the decade of 80's and are based on research.

II

Through studies conducted by the Calcutta Port Trust (the then Calcutta Port Commissioners) and other agencies, Haldia was chosen as an ideal site for establishing the auxiliary port. It is 56 nautical miles downstream from Calcutta, located at the confluence of the rivers Hooghly and Haldi, the latter a tributary flowing from west. The estuarine location and availability of a deep water advantage attracted an oil refinery and a fertilizer plant. The need of a bulk handling port was very strong since the basic raw materials for the production process, such as crude for the refinery and rock phosphate (from Middle East), sulphur (from USA, Canada, Mexico), muriate of potash (from USA, Canada) and common salt (from West Coast of India) were to be imported by sea. The construction of the Fertilizer Complex at Haldia began in 1972 and had to be continued beyond 1980. Although the investment did go upto Rs. 450 crores, the commercial production has failed to take off even today because of some serious design and process problems. The refinery is, however, functioning well.

Haldia apparently opened up visions of creating a growth node in a relatively backward region in the State of West Bengal as well as encouraging a counter-magnet to Calcutta metropolis in terms of industrial de-polarisation in the metropolitan region. The Planning Commission, Government of India, during the early years of the Fourth 5-Year Plan period (1969-73), declared Midnapore District as a Backward region which entitled intending industrial entrepreneurs substantial financial incentives and subsides. To further strengthen the prospect of industrial development in Haldia, the state government of West Bengal in 1972 declared Haldia as a Growth Centre along with seven other towns in the State. The stated objective of the State was to encourage industrial and economic activities in areas other than the Calcutta Metropolitan District (CMD) to reduce pressure on it and create employment opportunities outside CMD. Haldia began to be identified as not merely a subsidiary to the port of Calcutta to supplement its facilities, but as a new growth centre in the region and a new seaway to the prosperity of the entire Eastern India. In order to promote the

growth centre at Haldia, the Commerce and Industries Department of the State Government announced (1973) a package of incentives to industrial entrepreneurs. The West Bengal Industrial Development Corporation (WBIDC) was reorganised into a full-fledged industrial promotional agency (1973), and a statutory agency called the West Bengal Industrial Infrastructure Development Corporation (WBIIDC) was set up (1974) for developing industrial infrastructure in the growth centre, again with a specific focus on Haldia.

Following these developments, a large number of private sector enterprises came forward with proposals to set up industries in Haldia. Many of these proposals got quickly processed and by the beginning of 1975, eight Private Sector proposals and three Joint Sector proposals were approved by the Government of India and West Bengal. Besides, five Public Sector projects were proposed by the State Government and one Private Sector proposal was awaiting approval of the Central Govern-ment. A detailed study by the Development Planning (T & C P) Department, Government of West Bengal, published in 1975 (*An Outline Development Plan for Haldia Urban Industrial Complex*, pp. 5-6), listed a total of 17 (excluding the Oil Refinery and the Fertilizer plant) industries which, by 1975, had expressed intention to establish plants in Haldia. Amongst the names listed, there were well known companies like : India Tobacco, Andrew Yule, Hindustan Lever, Bengal Coal, Rallies India, Indian Drugs & Pharmaceuticals, Delhi Cloth Mills, etc. A Ship Building Yard and expansion of the Refinery were also listed.

Besides these industries listed, the State Government of West Bengal had very strongly been pressing the Government of India to approve the establishment of a Petro-Chemical Complex. This was viewed as the most appropriate propulsive industrial activity in the new growth centre of Haldia, since the essential inputs would be available from the by-products of the refinery located here. Besides, the need for a Petro-Chemical Complex in this region was strongly felt to feed Calcutta industries and markets as there is a great demand for these products in this area. Around 1975, the project estimated an investment of Rs. 350 crores and an employment of about 3750 when the complex would operate in full swing.

Upto 1975 January, therefore, the total amount of industrial investment at Haldia (including Port, Refinery and Fertilizer plant under construction and the rest proposed) was envisaged to total approximately Rs. 750 crores (1975 prices) with potential to generate about 22,000 direct industrial jobs, considered achievable by 1981. Accordingly, it was estimated that by 1981 Haldia Urban-industrial complex would have a population of 2,10,000 including the Port and the expected industrial workers as well as the workers in ancillaries, infrastructure and services, trade and commerce to follow the industrial growth.

The prospect of Haldia becoming a dominant growth centre in the region began to emerge in the early 70s. An Interim Strategy Plan for Haldia prepared in 1971 by the Government of West Bengal took into account the multiple roles that Haldia could play on four levels of regions as follows :

a) *Hinterland Region* - the port functions shared with Calcutta and serving the entire Eastern India region should influence the economy of a vast hinterland region.

b) *Metropolitan Region* - a large part of the Calcutta Metropolitan region to the west of the Hooghly river would be an area to receive significant impact from the large basic industrial growth potential identified for Haldia. The impact could particularly be pronounced in the existing nodal areas (e.g. Kharagpur-Midnapore city group) in the region.

c) *Inner-Influence Region* - the area covering the entire Tamluk sub-division consisting of the six police stations of Panskura, Tamluk, Moyna, Mahishadal, Sutahata and Nandigram with Haldia located at the southern tip, would have the strongest influence of Haldia and also be the main commuters' zone.

d) *Core-Region (or Haldia Urban Region)* - the area adjacent to and inclusive of Haldia would experience rapid urban spread including growth of business, commerce, administration, social services and facilities.

By the mid 70s, with the Haldia Dock Complex functioning, oil refinery commencing production, fertilizer plant construction initiated, petro-chemical complex under negotiation, a large number of industries lined up for establishment, railway and national highway connections established, state agencies set up for promoting Haldia's rapid growth, and, building of the township under progress, Haldia was all set to take off as the Growth Centre that was expected to transform a backward regional economy through spatial

developmental impacts. Haldia had arrived ! But then, evidences gathered around the end of 80s with regard to the much expected growth of Haldia and it's spatial impact in the region indicated that not much have been achieved. The evidences are highlighted below.

II

Haldia was expected to have a population of about 2,00,000 and a direct industrial work force of nearly 22,000 in 1981 as projected by the Interim Strategy Plan based on the industrial growth considered achievable by that time. Actual growth has been much less with 1981 population as 55,606 and direct industrial workforce as around 7,000. Amongst the four urban centres (Haldia, Mahishadal, Tamluk and Kolaghat) within the identified Inner Influence Zone of Haldia, population growth, participation rate, and workers growth are, however, much higher during both census years of 1971 and 1981. This was expected as is natural for any new industrial town to record very high population growth with low initial base. Haldia, therefore, remained as a force loaded with potentials.

Since early-eighties Haldia's employment expansion has been declining as compared to the rate of growth achieved during 1971-1981. This is because no major industrial investment has materialised after the Dock Complex, the Refinery and the Fertilizer plant. Out of the 17 identified industrial units expected to establish plants at Haldia by 1985, only 5 had started operations by then. The number of industrial workers by 1985 were estimated to be 8,066. The growth of several city-serving activities and supports in Haldia was also owefully deficient. This was evidenced through a somewhat detailed enquiry conducted in 1985 with the Haldia residents on their perception about the quality of life at Haldia based on a set of 14 factors covering economic opportunities, banking and commerce, social services like education and health, utilities and basic services including housing, transport, law and order, and environment. On an average for each factor more than 60% expressed dissatisfaction. Development of Haldia's infrastructural resources were utterly neglected which, if attended to during the initial years, could have played a very useful role in attracting new investments in Haldia and in promoting the growth centre functions.

It is found that the industrial activities located in Haldia have no backward or forward linkage within the inner influence region identified for Haldia. Therefore, indirect employment is practically nil. In case of direct employment, as of 1985, there were about 8,066 industrial workers in Haldia. About 30% of these were daily commuters, i.e., workers from the region employed in Haldia industries. About 10% of the workers in Haldia industries were employed from the region but were residents of Haldia. About 60% of the industrial workers in Haldia were migrants from outside the region. In contrast to the migrant workers in Haldia which is mostly directly employed or transferred from other regions and, which are relatively well paid with technical, managerial and other white collar jobs, the locally employed workers are involved mostly in unskilled, relatively low paying jobs. In fact, a large number of these workers were originally residents in the acquired villages and began working as construction labour in the port. This nature of involvement of local labour force in Haldia industrial economy is a direct outcome of the nature of industries that developed in Haldia. The regional/local labour force are hardly equipped to participate in the high-skill composition of the industries. Also, the expected growth of industries did not take place to be able to offer greater opportunities for jobs to the regional/local labour force. Therefore, while there has surely been some direct employment opportunities created for the regional labour force, the magnitude of involvement remains small both in proportion and in benefits.

The consumption expenditure behaviour of the commuters employed in the growth centre industries is often seen as an important channel through which impact on the regional economy is created. With regard to consumption expenditure of the commuters in the region vis-a-vis income from jobs at Haldia spent within the region, the enquiry indicated that the low level of aggregate income earned did not provide any freedom to the commuters to procure consumer durables. More important is the fact that wherever there has been a tendency amongst the commuters to buy durables, the markets preferred were Tamluk or Calcutta, and not Haldia. Tamluk definitely is receiving a large share of income earned in Haldia through consumption expenditures of the Haldia commuters. In case of the daily consumables, the expenditure of income earned at Haldia by the commuters are generally destined to larger villages nearest to the commuters' locations and the nearest urban centres within the region, particularly Mahishadal and Tamluk. The smaller settlements within the region are not benefiting, in any case, through the income multiplier in trade and commerce activities. It

13. *Administrative Building of Haldia Dock Complex*

14. *Heavy Lift Operation at Haldia Dock Complex*

is interesting to note that Calcutta is the expenditure-destination of about 15% of the income earned by the commuters from Haldia, which can be seen as a 'leakage' back into the CMD.

In terms of any impact caused by the emerging urban-industrial centre of Haldia on diversification of rural economy, the results of the enquires in 1985 indicated that

a) Haldia's growth has been too small over the past two decades to be able to influence any commercialisation in the agricultural economy. Haldia's demand is not yet big enough to motivate farmers;

b) the industrial economy developing in Haldia are neither linked with any local/regional resource nor are they local-demand serving in nature so as to generate incentive and create opportunity for linked economic activities and employment in the region. Also, ancillarisation for Haldia industries was yet to begin; and

c) only marginal expansion in trade and commerce has taken place but that is attributed to the natural growth of demand with population growth.

Contrary to the expectation that Haldia will have developmental impact on a likely Influence Zone comprising of six Police Stations of Panskura, Tamluk, Moyna, Mahishadal, Nandigram and Sutahata, an examination of the levels of development around mid-80s in these six Police Stations clearly indicates a very localised influence of Haldia. The old urban centre of Tamluk and the newly emerging power-plant based town group of Kolaghat-Mecheda are obviously stronger nodes than Haldia with the economy of the surrounding regions dependent on these. It is to be noted also that the relative levels of development in the two northern Police Stations of Tamluk and Panskura are higher than the two Police Stations of Mahishadal and Sutahata adjacent to Haldia. This may be ascribed to as yet weak or almost non-existent economic and social linkages between Haldia and the region barring few commuters for jobs at Haldia.

While indicators show that Sutahata, within which Haldia is located, has experienced highest rate of density increase (1971-1981), highest rate of population growth (1971-1981), lowest proportion of cultivators to total workers (1971 and 1981); lowest growth rate of agriculture labour (1971-1981), it at the same time has highest household size, highest dependence ratio, lowest participation rate, lowest share of non-primary workers to total workers, highest concentration of agriculture labour to total workers and highest ratio of agricultural labour per 1000 cultivators (1107 in 1971, 1175 in 1981) compared to the five Police Station average of 589 and 588. This pattern is disturbing indeed in the sense that Haldia has displaced much more population than it has been able to provide with opportunities, the population influx in search of jobs has been much more than jobs available, and there is an increasing dependence on a decreasing supply of available land for agriculture. Negative impact is clearly evident and is quite severe in this regard. The data available in 1986 from the Project Employment Exchange revealed that every year since middle of the 70s, on an average, not more than 5% of annual registrants have got employment and the Live Registrar Count has swelled to about one lakh.

The residents of Haldia seem to be having a better life. Mostly well-educated and placed with well paid technical, clerical and managerial jobs, they have a better standard of living. Of the Haldia resident workers in Haldia industries, about 75% are migrants from outside the impact region, 84% have come to Haldia for employment of which 48% are on transfer from parent departments elsewhere. While the average household size is 4.16, about 60% of the respondents were earning more than Rs. 1500 per month (1985 prices). Almost all of these Haldia residents working in the Haldia industries were provided with company accommodation in the Haldia Township. Interestingly again, the residents of Haldia themselves did not seem to have much confidence on Haldia markets in case of purchase of specialised items of durables. About 60% preferred Calcutta (mostly) and Tamluk. A high degree of dissatisfaction was noted amongst the Haldia residents about lack of adequate economic and social services, utilities and infrastructures for decent living in Haldia.

Only 28% of the commuters responding to this enquiry has expressed any level of confidence about Haldia's role in developing the rural region. The rest has expressed dissatisfaction with 54% assessing that Haldia's stagnation, lack of complementary programmes of the government, and a mismatch between skill needs and skill available locally are great obstacles in the path of the region benefiting from Haldia, particularly in terms of employment. Government's apathy towards the region's developmental needs to enable it interact with Haldia has been highlighted by most.

The brief observations above indicate that Haldia, the emerging urban-industrial complex and the declared growth centre, has not been able to create any development impact in the region of location even after nearly 25 years (between 1963 and 1988). It will be relevant to explore the causes a little deeper.

IV

In setting up the auxiliary port at Haldia and in declaring it as a Growth Centre, the State has played the key role. However, and unfortunately, the State has considered it appropriate to leave the growth and impact potentials of Haldia to an 'organic process' expected to be induced by an extended port function of Calcutta. The State has ignored the very essential interventions and supports to make Haldia and the identified impact region mutually responsive in realising the objectives of promoting a powerful regional urban-industrial nexus expected to act as a counter-magnet to Calcutta in due course. Several lacunae in this regard are very apparent as indicated below.

The core activities established in Haldia have no regional linkage. While the nature of the early major industries along with the development of the Port are justified as the initial 'core' activities, there should have been a serious and consistent drive by the State to encourage a continued industrialisation process particularly related to the regional resources and demands. It can not be ignored that nearness to Calcutta is one major constraint for Haldia to grow in a natural process. This should have been countered through State intervention with rapid provisions for adequate infrastructure like power, water, utilities and services, social facilities, housing, etc., absence of which in Haldia during the early two decades of it's growth has been very damaging. Even small scale potential investors have considered Haldia's viability as a potential market doubtful. In fact, too much time has been wasted in staking Haldia's potential 'great leap' through setting up of a petrochemical complex, however feasible and justifiable it may be and, in that process perhaps smaller possible investments have been overlooked or allowed to concentrate in and around Calcutta.

A great confusion is the pattern of physical development of Haldia. A distance of about 15 Km. separates the Port Township (with about 18,000 population) and Durgachak having the urban service facilities (with about 8,000 population). Urban spread is tending to develop northwards away from the Port-Industrial Township. Commercial and other facilities were skewdly distributed and particularly glaring are the locations of commerce and health facilities at places far away from the consumer-locations. This peculiar feature of spatial arrangements persists even today with inadequate mass transport linkages.

The regional transport network is highly inadequate with only about 25% of the rural settlements in the region having direct access to the Mecheda-Haldia metalled road and the Panskura-Haldia railway. The general nature of road and the railway network developed in the region is more oriented towards inter-regional flows than intra-regional flows. This acts as a disincentive to the desired interactions between Haldia and a large segment of it's designated influence region, particularly in promoting trade and commerce.

The programmes to support and transform a subsistence agriculture to commercial agriculture as well as to promote other primary sector diversification in the region are traditional and not complementary to develop a linkage with a growing urban-industrial economy. There is hardly any effort to attitudinally orient the regional population to derive advantage from the emerging urban-industrial centre and the potential economic opportunities. No well-directed programmes in improving social services, particularly education and vocational programmes for skill formation of local population for participation and enterprises in diversified economic activities have been initiated.

Perhaps, the single most damaging event to restrict Haldia's growth as well as the potential role as a regional growth centre has been the State decision for the location of the Thermal Power Plant at Kolaghat. Considering the locational advantages in terms of transport linkages, nearness to resources for power generation, large chunk of land etc., perhaps Haldia could have been an equally suitable choice. In fact, the desirability of locating the plant at Haldia was indeed critical in the context of strengthening it's economic base and to creating the 'critical mass' that would propel it's potential growth as a major urban-industrial node in the region. Also, Haldia's 'visibility' to prospective entrepreneurs would have immensely increased. But, this was not to be. The establishment of the Power Plant at Kolaghat reversed whatever initial trend of convergence of industries and intra-regional aspirations centered on Haldia had emerged.

V

In totally, Haldia's growth has been stunted and whatever little amount of spatial impact Haldia has been able to generate in the region could not have caused much of upward transition of the region that this growth centre was originally intended to address. But then Haldia is only about 30 years old today which perhaps is relatively a short period of time to realise the expected potentials, particularly located as it is in a backward predominantly subsistence agricultural economy and so close to Calcutta as well as competing urban-industrial town group of Kharagpur-Midnapur. However, newer hopes are emerging in the context of the liberalised economy and rapid changes in the investment environment which may augur well for Haldia. In this perspective, a re-assertion of the State commitment for Haldia is necessary to quickly make up the otherwise receding opportunities. The need was to bring about well-directed and powerful policy interventions, if at all Haldia's potentials as an urban-industrial complex and a regional growth centre were to be realised.

A set of immediate thrusts may be identified in this regard in the form of relevant public policy interventions, such as :

a) expansion, to the extent originally planned and feasible in today's context of the Port facilities and functions with involvement of private capital as the new economic policy is advocating;

b) improvement of Haldia's capability to attract larger number of entrepreneurs in industry and commerce through promotion of appropriate Economic Overhead Capital (EOC) and Social Overhead Capital (SOC) in Haldia urban area;

c) promotion of ancillarisation for the existing and the intending basic activities of Haldia in the local spatial context as well as of rapid industrialisation in small and residentiary sector in Haldia necessarily linked with the regional resource base. In this context an important task of the State will be to ensure larger participation of the potential local entrepreneurs in the downstream industrial activities in the wake of the emerging petro-chemical complex;

d) development of an efficient intra-regional transport network with Haldia as the main centre of convergence and creation of an adequate social service base, particularly for improving the regional human resource, to participate in the growth process within the region. Parallel efforts are essential in the region to diversify and commercialise the rural agricultural economy as a potential resource generator for agro-based processing activities; and

e) revival of the initial State commitment for Haldia's future through genuine efforts of the WBIDC to encourage the increasing number of intending large investors in West Bengal to establish their industrial projects in Haldia.

The history of urban-industrial develop-ment process is replete with examples of fluctuating fortunes of urban habitations through a cycle of prosperity and stagnation. It must, however, be noted that more than a dependence on an organic process, it is the nature of public policies across a network of urban habitations that influences the fluctuations. This is more critical in the context of a metropolis-dominated urban pattern as the one we have in this part of the world. Deliberate public policy interventions at appropriate place and time are the imperatives if the State design of controlling large-city growth and encouraging counter-nodes is to be meaningfully pursued. The relevance of such a policy in the context of West Bengal need not be overemphasised. Haldia's future, where the initial efforts have survived over three decades, should be seen in this perspective and the urgency of this can not be relegated any more.

The role of the Calcutta Port Trust in this revival of Haldia's urban-industrial future is potentially crucial. The nature of controlling and promotional policies vis-a-vis the expansion of the activities and functions of the Haldia Dock Complex are considerably influenced by the Calcutta Port Trust as the parent organisation. In the context of the efforts for a better realisation of Haldia's potentials as an urban-industrial node and a powerful regional growth centre, it may be useful to have a closer review of the likely promotional role that the CPT can play in facilitating HDC to participate more meaningfully in Haldia's growth and to set a chain of multipliers through port-function related industries, trade, commerce and services. After all, Haldia's genesis was through a Port function and there is no dearth of cities all over the world which, for their economic diversification and prosperity, owe a great deal to their ports.

15. *Quay Side Gantry at Haldia Dock Complex*

16. *Handling of Locomotive at Halida Dock Complex*

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THE HOOGHLY AND THE PORT OF CALCUTTA

S.K. Bhattacharya

Three hundred years ago when Job Charnock set sail above Kulpi-Diamond Harbour, his choice to lay anchor was available only along the deep water stretch on the left bank at Sutanoti-Gobindapur-Kalikata. Further upstream rivers connected it to the heart land of India through the Ganga. Navigational hinderence, if any, was rare and mild during the dry season.

When the Port Authority was set up in 1870, it inherited practically no terminal facilities, imposed with the liability of a deteriorating water way for lack of adequate head water supply, a hostile Railway Lobby with ambition to dominate other modes of transport and Calcutta born Liner Conference Group setting course and pattern for regular sailing to far and distant ports and demanding modernised port services at no cost to themselves. Sailing vessels then ruled international shipping and was only surpassed by steam navigation at the turn of the 20th Century. Demand of bunkering coal of Bengal rose sharply from Aden to Singapore which Railways could transport and the Port could hardly transfer much to the annoyance of the shippers.

On the credit side the Calcutta Port Trust (CPT) inherited a highly competent pilotage system supported by hydrographic surveys chronologically providing the characteristics of the channel extending to Bay of Bengal and a Project by Sir Arthur Cotton for augmentation of head water supply by a link canal from the Ganga to the Bhagirathi - Hooghly. Port Authority, apparently siezed with fear as an alternative to Calcutta, considered Port Canning on the River Matla. However, both for hydraulic regime of the River Matla, burden of investment for the railways for linkage with the coalfield and unwillingness of the shippers to move their office from the Capital City were sufficient to tilt the choice to build the enclosed dock system around 1890 at Kidderpore, Calcutta.

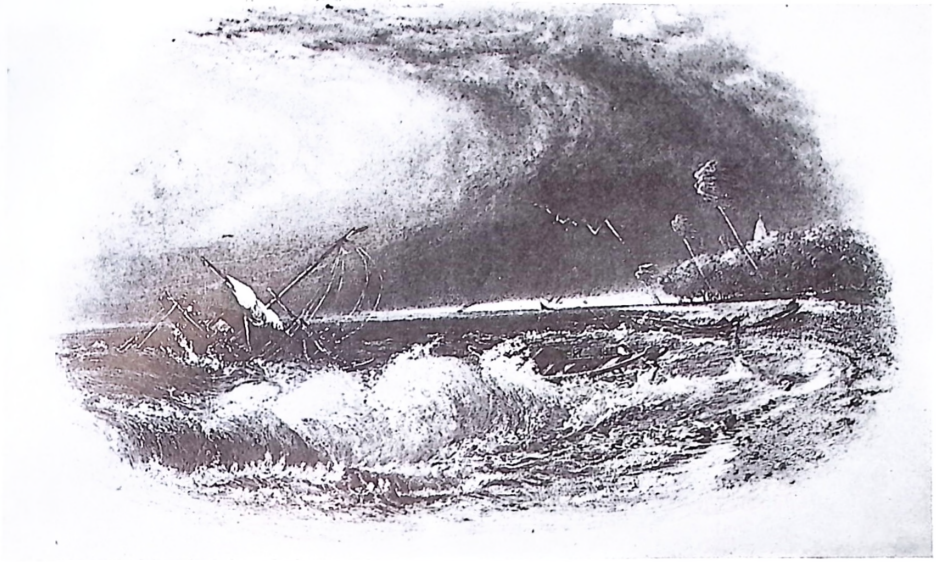
There are reasons to suppose that a perverse technical choice was imposed in the 19th century for letting direct inland water transport with Calcutta and the Ganga to languish and thus concurrently accelerating unhindered decay of the navigable channel to Calcutta. The controversy then ranging in Europe particularly in the U.K. was in favour of railways to swallow up canal transport. This rational without any logic was applied to India. A Select Committee of the British Parliament called upon Sir Arthur Cotton in 1872 to answer over thousand questions on his canal projects. Main spokesman of the Railway Lobby was Lord George Hamilton who could not deny that the investment in railways was totally in red and could be sustained because of the guarantee system. The British investors were reimbursed a minimum rate of return on capital out of the Government of India revenues. Further, altogether different kind of rationality guided the investment preferences of Her Majesty's Government. For the canal of over 99% of the cost was appropriated in India and for Railways 57% of expenditure was in England.

Without shedding much tears on missed opportunity, CPT relentlessly pursued the issue of head water supply for preserving Calcutta. Over a dozen Committees deliberated on measures for the survival of the Port. Experts often differed, but there was one common consensus that the Hooghly needed more water supply from the Ganga and without which progressive fall of navigable depths would be irreversible and ultimately affect esturine reaches below Diamond Harbour.

In 1947 came the partition of Bengal. Sir Cyril Radcliffe, the Chairman of the Partition Commission recognised the vital issue of the Port at Calcutta and asked himself the basic question :"If the City of Calcutta must be assigned as a whole to one or other of the States, what were its indispensable claims to the control of territory, such as all of part of the Nadia river system or the Kulti rivers, upon which the life of Calcutta as a city and port depended." Sir Cyril answered the issue by exchanging a predominantly Muslim district of Murshidabad with a predominantly Hindu district of Khulna in such a way that the barrage and the link canal would fall entirely within the Indian Union.

Now that head water supply from Farakka has been restored to some extent and the delta building activity has resumed seaward, two problems of considerable significance to CPT comes to mind. First is the need for vigilance against uncontrolled interference with the tidal regime by construction, such as bridges. On the Rupnarayan near Kolaghat, the placing of large number of bridge piers during 1960-65 reduced significantly channel capacity by over about 35% and aggravated flood hazard in the Lower Damodar as was experienced in 1978.Secondly, implementation and awareness of importance of sequential programme for corrective works of the fairway linking Haldia across Balari bar to deep waters on the left bank has now assumed considerable complexity.

CPT has gathered at frequent invervals since 1835 a wealth of knowledge on the morphology of the Estuary Reach. Looking deep into the morphological history, it could be seen that presently navigated Rangafalla. Channel carries considerable hazard at its lower reaches restricting passage of vessels to Calcutta. Further, the measures to arrest morphological changes induced at the head of the Nayachara Island adversely affecting the navigable reach to Haldia is real and urgent. However the CPT has demonstrated ample capacity to overcome such adversities in the last one hundred and twenty years. It can, no doubt, continue to do so in the future. Its efforts in the Estuary Reach will properly be rewarded, we believe.



17. Monsoon Hits the River
(artist unknown)

18. The River : when Sails Ruled the waves

19. *Great Cyclone of 1864 : `Mirzapur' and Aladin' foundered at Armenian Ghat*

20. *Great Cyclone of 1864 : Govindapur' foundered off Jackson's Ghat*

THE HUGLI ESTUARY : A PROFILE

Tapobrata Sanyal & Anadi Kr. Chatterjee

The Hugli estuary is the principal drainage artery for Bhagirathi-Hooghli river and a number of its major western tributaries. This waterway is non-tidal for about 221 km from its off-take from the Ganga and tidal over the remaining 281 km. The estuary is within a fine alluvial environment.

The shipping channel to Calcutta and Haldia Dock systems has to negotiate a number of shallow patches, namely, Middleton bar at 8 km downstream, Auckland bar 20 km upstream, Jellingham shoal 38 km upstream and Balari bar 58 km upstream of the sea-face at Saugor. These bars are located in variable situation, such as eroding banks, growth and decay of submerged sand flats and several unstable islands. The major island is called 'Nayachara'. (See Fig-1).

Of the four bars, the Balari-Jiggerkhali substantially influences the stability of the shipping channel to Haldia Dock Complex. Approaching the bar from the upstream, the estuary takes a turn towards west after crossing Diamond sands. The curvature becomes sharp after Kalpi and the estuary then suddenly widens from 2660 m to 8475 m in a span of 4000 m. This ultimately has given the estuary a braided configuration, creating 'Nayachara Island' almost at the centre. The two channels, thus formed, namely Jellingham-Haldia-Jiggerkhali-Balari channel on the western side and the Rangafalla channel on the eastern side, meet again downstream of 'Nayachara Island'. The Rangafalla channel meets Channel Creek near Silver Tree point and at the junction there existed a number of small islands viz. Ghoramara, Lochachara and Bedford, out of which the last two now remain as submerged sands. This has made the flow pattern in the zone very complicated. The curvature downstream of Kalpi creates a deep channel along the eastern bank and causes sediments to settle towards the western convex banks along the radius of curvature.

Approaching the estuary from the Bay of Bengal, the first shallow area is the Middleton bar. Being situated in the outer estuary, i.e. practically in the open sea, the principal parameters governing the depths over this sand bar are determined by an array of hydraulic, geological, geographical and meteorological characteristics, different from those influencing the depths over the inner estuarine sand bars. The dynamics of flow over this sand bar is mainly determined by interaction of strong tidal currents, waves, cyclones, littoral currents and the sediment load brought down by the estuary. The bar is just on the eastern side of two very big submerged sand flats called the Upper Long Sands and the Lower Long Sands. Over the last 125 years or more, these two sand flats are oscillating in locational orientation. Their lateral eastern movement reduces depth of water on the Middleton bar while their lateral western movement improves it.

The navigation channel at Auckland bar within the inner estuary of Hugli, about 120 km downstream of Calcutta, has been one of the continuing impediments to the navigation to Haldia Docks, 50 km inside the estuary from Saugor. The navigation channel after crossing Middleton Bar approaching the estuary from the south meets the principal sand outcrop in the delta (Saugor Island) and proceeds south-west to a major shoaling region covering a length of 6 to 7 km. The channel again becomes deep till it crosses another major sand flat, viz. the Jellingham shoal.

After crossing Auckland, the next major bottleneck in the shipping channel leading to Haldia is the Jellingham shoal, some 38 km upstream of Saugor. The Jellingham shoal is situated in the Haldia-Balari channel and acts as an impediment to the deep drafted vessel calling to Haldia. Before 1975, Jellingham shoal was not a major problem to shipping. However, with the dwindling discharge from the river Haldi, the flux, both flood and ebb, in the Haldia-Balari channel began to decrease. The flushing caused by the Haldi river discharge, being practically non-existent now-a-days, is a major factor in the deterioration of the shoal. Regular maintenance dredging has become unavoidable in the area during the last twenty years even to keep the

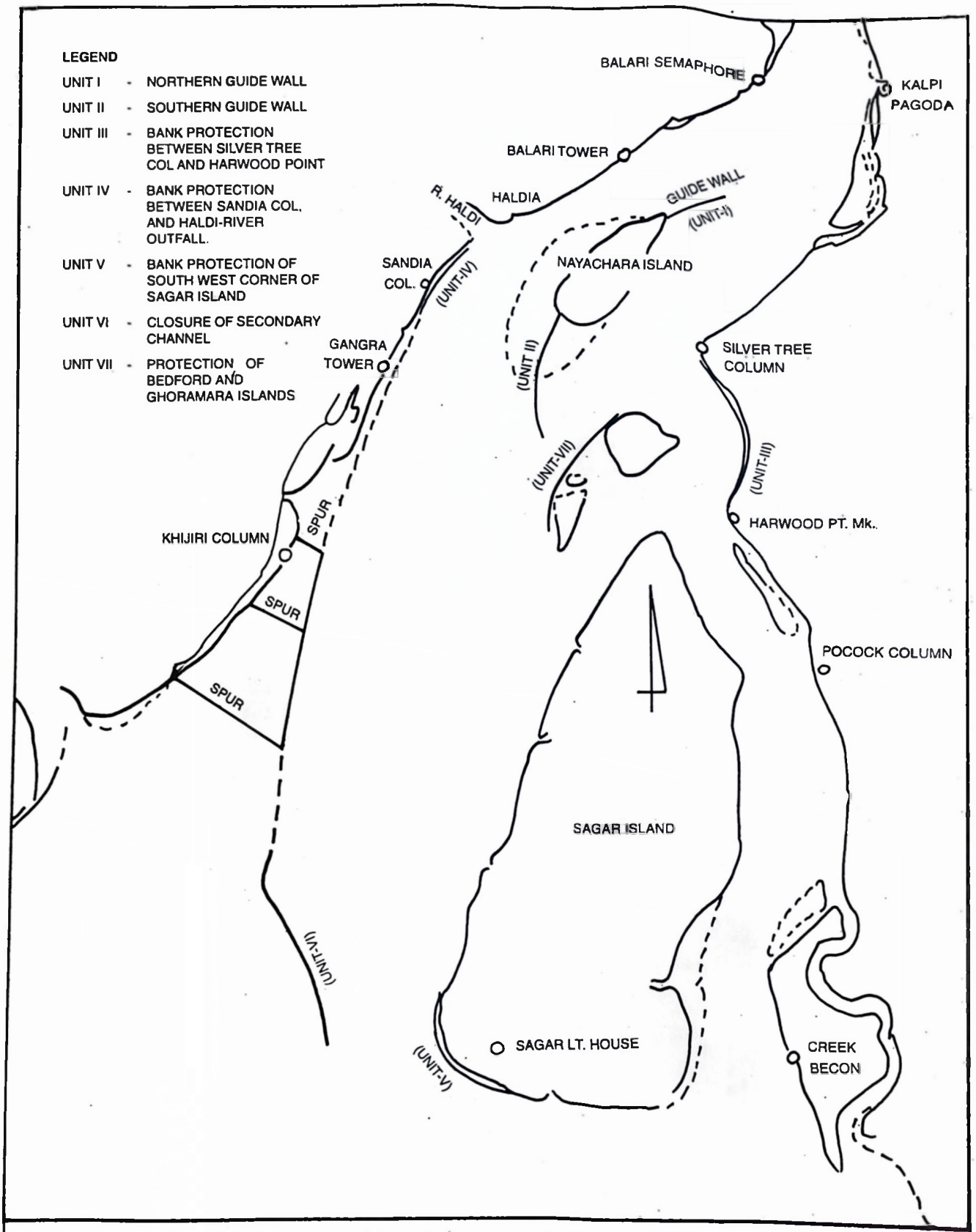


Figure 1 : Comprehensive Scheme for Improvement of Drought in the Hooghly Estuary.

depth in the shipping channel at par with that of Auckland bar.

II

The Hugli estuary is characterised by a vast expanse of syndepositional fluvio-tidal and marine coastal sediments (sand, silt and clay) in a deltaic and tropical environment where mangroves play an important role. The Hugli estuary has virtually turned into an abandoned part of the lower delta plain of the Ganga-Brahmaputra. Pliestocene sediments of the earlier Ganga-Brahmaputra differ from the recent deposits in colour, texture, water and organic contents. The estuary exhibits a coarse structure at the upper reaches (D_{50} = 0.12 mm) to a finer one at the lower (D_{50} = 0.09 mm).

The source of fresh water supply into the sub-delta of the Bhagirathi-Hugli is from its western tributaries. However, contributions from western tributaries are only during the monsoon-months, hardly for about 70 to 80 days in a year. With the commissioning of the Farakka Barrage Project in 1975, during the non-monsoon months of the year perennial discharge of varying quantum upto a maximum of 40,000 cusecs was available through the feeder canal into the Bhagirathi-Hugli river system. During the monsoon, the freshet discharge varies from 50,000 cusecs to 300,000 cusecs.

The estuarine wind pattern is more or less in tune with the general wind system of the sub-continent. From statistical analysis of recorded wave data at Gasper, discarding 5% excedances of probability as not too significant, design wave heights and periods monthwise are shown in Table-1. The combined probability of the occurrence of a 2.4 m wave with 4 seconds period is about 3.6%. However, this excludes the occurrence of severe storms and cyclones.

The average annual rainfall is of the order of 1650 mm while the maximum and minimum rainfall are of the order of 2000m and 1300m respectively. The bulk of the rainfall occurs during the months of July to October. The mean maximum and minimum temperatures are about 38°C and 13°C respectively. Humidity is about 90% of saturation during the monsoon months and remains high even during the earlier parts of the winter.

It has been well established from the analysis of the measured salinity data that Hugli estuary belongs to the well-mixed class. Mapping of the 'stratification index' i.e. $D/|V|^3$ where 'D' is the depth of water and 'V' is the amplitude of the surface velocity proves the point. The stratification index of Hugli is rather low, varying from 0.5 to 3.0 confirming that it is a well-mixed estuary. From the salinity distribution pattern measured from the research vessel R.V.'Anusandhani', it has been established that the variation of salinity from surface to the near-bed values hardly exceeds 5.0 ppt which again confirms about the well-mixed nature of the estuary. Since the commissioning of the Farakka Barrage Project the salinity values have gone down from about 33 ppt at Auckland to 18 ppt as of now due to increased sweet water discharge from upland.

For spring tide of range 5.0 m, the high-water surface salinity is of the order of 21.24 ppt, the mid-depth salinity is of the order of 22.50 ppt while the near-bed salinity is of the order of 23.40 ppt. Similarly, at the low water stage, the respective figures are 10.62 ppt, 11.70 ppt and 12.60 ppt. For a neap tide of range 3.0m and fresh water flow about 2500 cusecs, the vertical variations at the same location during the high water stage are as follows :

a) at the surface about 8.82 ppt;

b) at 0.25 depth from the surface about 9.18 ppt;

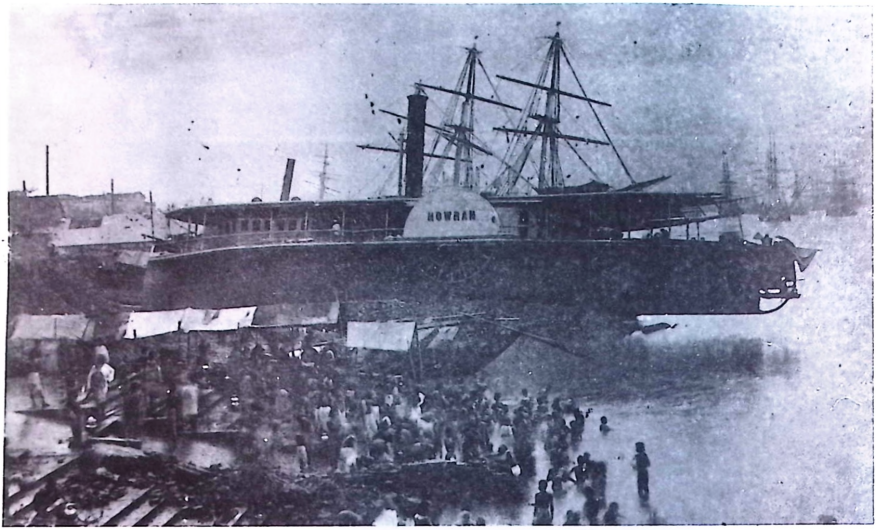
c) at mid depth about 9.36 ppt;

d) at 0.75 depth from the surface about 9.36 ppt;

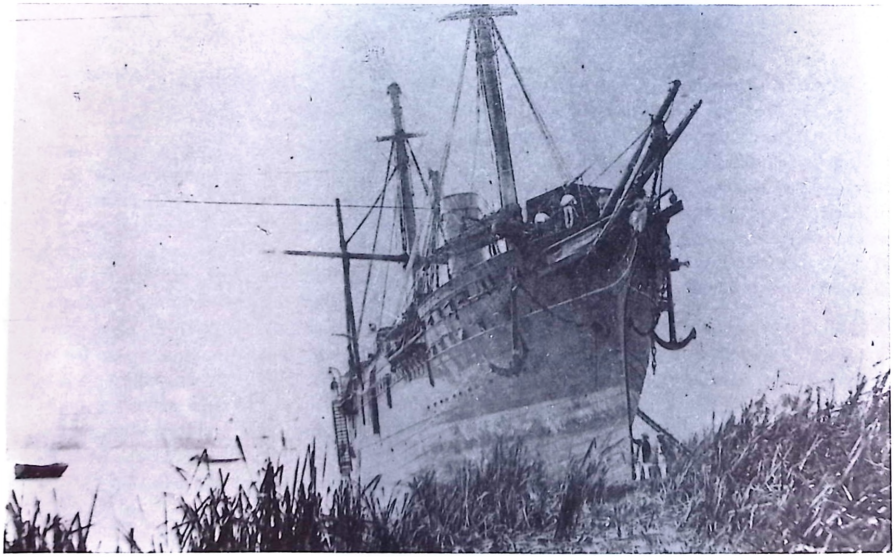
e) near bed, 9.54 ppt.

When high water salinity at Sagor (eastern side) is of the order of 24.5 ppt, salinity at the western bank Dadanpatra is nearly 28.6 ppt for a spring tide of range 5.0m. Similarly, the high water salinity at Harwood Point (eastern bank) is 16.2 ppt and at Gangra (western bank) is 10.26 ppt. During pre-Farakka days, when in non-monsoon months the estuary received no fresh water, the salinity was about 33 ppt at Auckland bar and landward salinity intrusion was as far as 38.5 km above Calcutta. With the availability of fresh water flow throughout the year after the commissioning of Farakka Barrage Project, the landward salinity intrusion has come down to 35km below Calcutta while the salinity at Sagar has also come down to 18 ppt.

Like many other estuaries of the world, the Hugli has flaired exponentially from Kantaberia. The area of cross section at mean tide level is related to distance upstream from seaface by the relation as $A_x = A_o e^{-lx}$



21. *Great Cyclone of 1864 : Grounded Steamer*



22. *Great Cyclone of 1864 : Grounded Ocean Liner*

;Where A_x = Area of cross section at distance x; A_o & l are constant, l is of the order of 5.3×10^{-6} and x : distance measured landward. The width at the seaface between Sagar and Dadanpatra is of the order of 30 km while that at 56 km landward at Kantaberia is only 1.83 km.

Maximum flood velocity in the estuary is of the order of 3.0 m/sec while maximum flood velocity of an average tide is of the order of 2.0 m/sec. to 2.5 m/sec. In the outer estuary 'rotary currents' are observed. Directions of currents, both flood and ebb, are dependant to a large extent, on the locations of the submerged sands.

The source of sediment in the Hugli estuary is from the upland as well as from the continental shelf. Sediment brought down by the tributaries of the Bhagirathi is pushed down the estuarine zone as a result of preponderance of the seaward flow. In fact, the total sediment load in the estuary oscillates due to tidal influx. It has been calculated that a total sediment load of the order of 230 to 240 million m^3 have entered the estuary since commissioning of the Farakka barrage Project. At the same time, sediments have also entered from the sea, though at a much lesser degree, (about 25% of the resultant sediment inflow into the estuary from the upland). Apart from sediment load contributed by the tributaries, substantial bank erosion of the river Bhagirathi in particular is also instrumental in adding to the sediment-load of the river. The suspended sediment concentration varies from 1 gm/lit to 3.2 gm/lit. This concentration tends to increase with the ebb.

The estuary experiences predominantly semi-diurnal tides with spring-neap variation of ranges from 1.2m to 5.5m at the seaface. Due to non-linear character of the tidal propagation in the estuary, overtides are generated. Considering one single representative tide the values of the amplitudes and phases of the different tidal components (overtides generated) are indicated in Table-2.

The tidal range increases by about 10% at 80 km inland from Sagar but then gradually reduces to 14% at a distance of 59 km upstream. The tidal wave after Hugli Point (the confluence of the Hugli and the Rupnaryan) propagates along both the branches till it reaches the tidal apex in the Hugli at Nabadwip (206 km approx upstream) and Bandar in the Rupnarayan (approx. 110 km upstream).

The tide from the Bay approaches the estuary from two different channels viz., the eastern channel and the western channel. Naturally their passage through the estuary gives different amplitudes and phases on both sides i.e. eastern and western sides of the estuary. Measurement and analysis of the data reveal the following picture :

Place	Bank	Amplitude	Phase
Sagar	Left	1.85m	143.4°
Dadanpatra	Right	1.76m	163.3°
Kachuberia	Left	1.87m	193.7°
Gangra	Right	1.98m	197.5°
Kalpi	Left	2.04m	221.1°
Balari	Right	1.94m	218.8°

It is observed that there is a phase lag between the tides passing through the estuary along the two banks. The eastern bank-tide goes ahead of the western bank and then gets mixed at the Balari region.

Being the main drainage artery, the estuary has to carry a wide variety of discharged contaminants from the big and small industries located on both banks, many of which have potential toxic effects. Moreover due to continuous dredging in shallow areas and consequent dumping in other locations, the benthic environment gets affected by turbidity due to floatation of sediments and transport of pollutants in different environmental compartments. It has been observed that there are significant reaction zones for chemical elements between Diamond Harbour and Sagar and for heavy metals between Diamond Harbour and Haldia.

The cycles of phosphates, nitrates and silicates in water are partly regulated by photosynthetic productivity, but mostly by chemical reactions ending in precipitation over the estuarine bed. Phosphate is higher between Haldia and Sagar than upstream. There is an overall addition of nitrates during all the seasons. Downstream of Diamond Harbour, there is always an excess of nutrients indicating a poor absorption capacity. Silicates, however, precipitate completely within the estuary.

Mangroves thrive in coastal zones where water is saline and where banks undergo alternating wetting and drying due to tidal submergence. The Hugli estuary is an ideal area for growth of mangroves. Nayachara Island has assumed vital importance in so far as navigability of Haldia Channel is concerned by virtue of its location.

This island, non-existent even 50 years ago, has grown over the years due to unabated accretion of sediments. The barren, uninhabited island which is just opposite to Haldia has been treated with mangrove afforestation. At present about a million mangrove trees exist in the island. Mangroves, besides improving the ambient ecology, are helping to retain the erosion-prone bank-line. This is a novel experiment which has attracted attention of the scientists all over the world. About 11 species have been tried with extremely encouraging results.

A Mangrove Interpretation Centre has been set up in the island for research on mangroves, their efficacy to control erosion and capacity to absorb water laden pollutants, specially trace metals.

Mangrove-associated trees have also been planted on the island. These are *Avicennia sp; Bruguiera gymnorhiza; Rhizophora sp; Ceriops sp; Sonneratia apetala; Xylocarpus granatum; Xylocarpus mekongensis; Excocaria angallocha; Aegiceros corriculata; Heritiera formes, Nypa fruticians.*

III

Principal morphological characteristics appearing to influence depths in the navigation channel are -

I. For *Middleton bar :* East-west movement of the sand flats, viz., Upper long sand and Lower Long sands which over the last 100 years or more have occupied a specific region in the estuary.

II. For *Auckland bar :* Growth and decay of submerged sand flats on the west, viz., Kaukhali-Mizzen group with development of secondary flow outlets to the sea (commonly called secondary channels)

III. For *Jellingham shoal :* Receding western bank between Gangra and Talpati column, unstable sand flat exhibiting both growth and decay over time on the downstream side of Nayachara island

IV. For *Balari bar-Jiggerkhali flat* : Sedimentation due to convexity within a wide estuary and flow complexity due to phase lag between the tides coming up the estuary along different channels (viz. Haldia-Balari, Rangafalla and Channel Creek)

There are hydraulic, analogue and numerical models for prediction and assessment of the estuary behaviour. Hydraulic model tests were conducted in two rigid bed models of scales 1:600, 1:100 in Pune (CWPRS) and 1:800, 1:160 in Calcutta (Hydraulic Study Department). The analogue model studies were carried out to simulate certain 'macro' behaviour of the estuary.

During the last 30 years, the advent of high speed, low cost, enormous powerful digital computers has revolution's the modeling techniques of very complicated flow phenomena including those of natural bays and estuaries. Hydraulic Study Department of Calcutta Port Trust has recently procured powerful computers and have developed in-house a number of software modules including a 2D model on the Hugli estuary. Development of a model for sediment transportation in the estuary is in progress. The numerical model will be of immense help in predicting the river behaviour and formulating river regulatory and dredging measures.

With a view to improving navigability of the Hugli estuary a comprehensive scheme with seven river training units (their locations shown in Figure 1) and capital dredging at Balari bar were planned in the early 80s. Only one of the seven river training units viz. construction of a 2.8 km long guidewall was sanctioned and completed in June 1992. The concurrent capital dredging over Balari bar however could not be executed due to failure of a foreign dredging contractor. The guidewall is supposed to perform the following functions :

a) To divide the flow and guide more flow through Haldia channel.

b) To prolong marginally the phase-difference of the flood tide between Haldia and Rangafala channels to the benefit of Haldia channel.

c) To induce siltation along the toe of both the shanks of the guidewall from about 2000m towards downstream.

d) To provide along with the cross spur protection to the eroding nose of Nayachara Island.

e) To prevent shift of the proposed dredge cut through Balari bar.

In view of the rapid changes in the estuary, it is high time that the comprehensive scheme which was earlier planned be reviewed in the context of the changed geo-morphological scenario. Nayachara Island which plays a vital role in so far as navigability of Haldia channel is

concerned, is also changing its shape and size. Besides, in order to extract maximum effects of the guidewall already constructed, the capital dredging at Balari region should be executed without further loss of time. The intensive maintenance dredging that was carried out recently has shown clear beneficial effects by opening up a flow propagation path, which was otherwise getting blocked due to spatial expansion of Jiggerkhali flat.

Maintenance dredging is a regular feature in the estuary but efforts need be optimised with the state-of-the-art technology. One point requires to be mentioned in this connection. The disposal of the dredged spoil in the estuary is done by free dumping at suitable deep locations within the estuary from where chances of re-circulation are minimal. Continuous disposal of dredged materials over the years is now posimg problems for finding such deep locations within the river. Time is ripe to search for suitable alternatives.

In view of the limitations in draft in any riverine port and with increasing ship sizes in the global shipping market, installation of a single buoy mooring at a suitable location near seaface has been under active consideration of the Calcutta Port Trust. Two such locations have been identified. One is at Digha High and the other is near Saugor Anchorage. Detailed geo-technical, geo-physical and bathymetric investigations have been conducted at the Digha High through Geological Survey of India. Induction of oil-cargo for Haldia IOC Refinery and other private refineries that have been proposed at Haldia with the help of a SBM in the outer estuary, may help rejuvenate Calcutta Port considering its inherent depth - limitations for accommodating deep - drafted vessels.

Table -1 : Design Wave Height from March to November

Months	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.
Wave Height (M)	1.2	1.2	1.8	1.8	1.8	1.2	1.2	1.8	1.2
Wave Period (Sea)	12	10	10	12	12	12	12	12	10

Table - 2 : Tidal Amplitudes

Harmonies	M2		M4		M6		M8	
Places	Amp	Phase	Amp	Phase	Amp	Phase	Amp	Phase
Sagar (0Km)	2.217 m	131°	0.186 m	176°	0.042 m	142°	0.035 m	126°
Gangra (31Km)	2.433 m	154°	0.418 m	42°	0.084 m	26°	0.049 m	62°
Haldia (43Km)	2.446 m	164°	0.515 m	60°	0.169 m	89°	0.100 m	14°
Balari (55 Km)	2.345 m	172°	0.564 m	83°	0.198 m	139°	0.105 m	14°
Diamond Harbour (69 Km)	2.383 m	3°	0.617 m	94°	0.299 m	162°	0.142 m	50°

23. River Dredger

24. Dredger at Work in the River

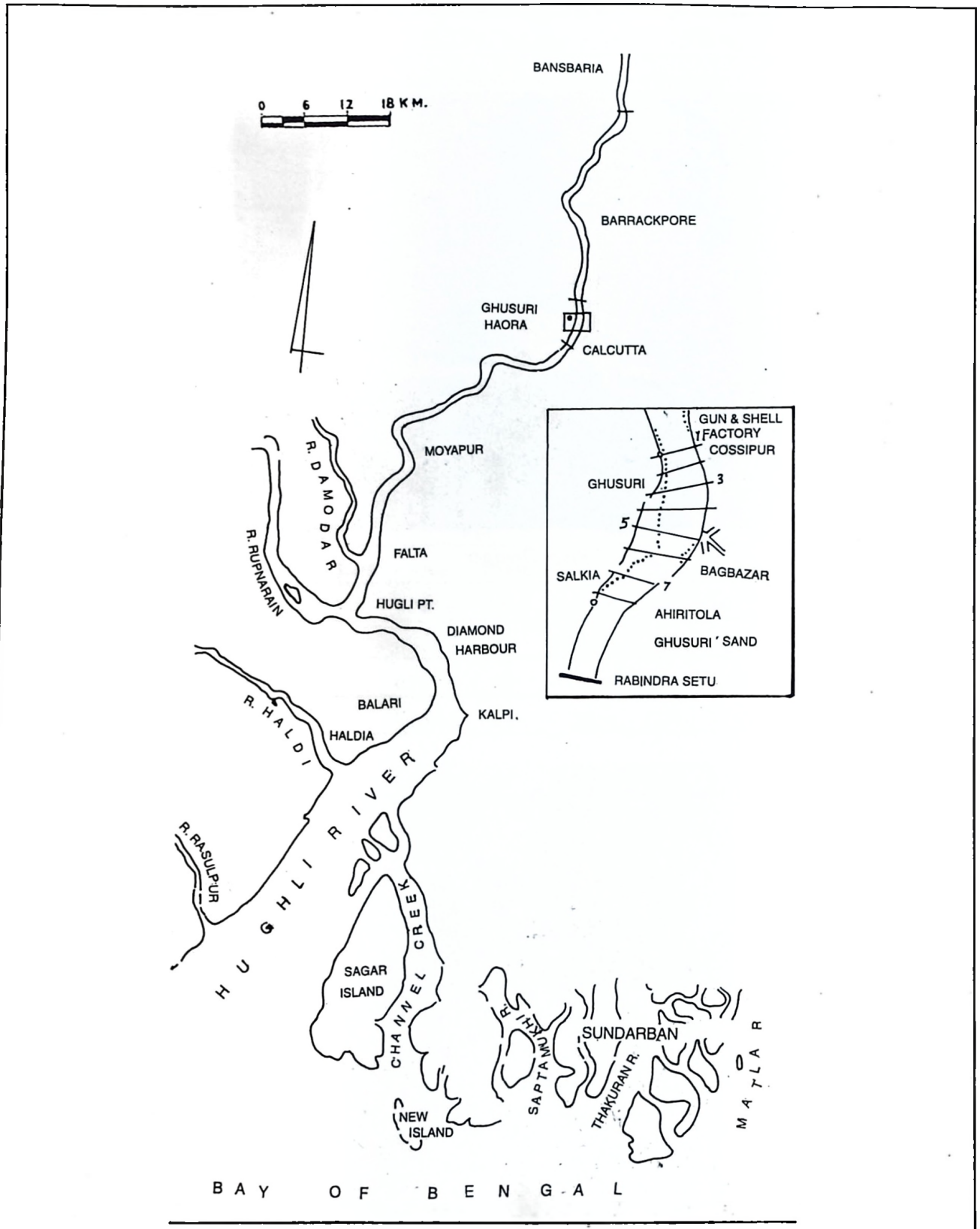


Figure 2 : Location of Ghusuri Sands in the River Hooghly.

FARAKKA BARRAGE PROJECT : Promises and Achievements

Tapobrata Sanyal & Arun Kumar Chakrabarti

Farakka Barrage Project, initially conceived for preservation for the Port of Calcutta, was commissioned on April 21, 1975. One of the major objectives of this Project is to rejuvenate the Bhagirathi-Hooghly river, specially the stretch of the shipping channel upstream of Hooghly Point (where the river Rupnarain meets the river Hooghly). This navigational channel between Hooghly Point and Calcutta Dock System is fraught with bends, bars and bores. Depleting depth in this stretch was also a cause for concern. An index plan of Bhagirathi - Hugli River system is given at Fig. 2.

During the pre-Farakka-period, the depth over the governing bars in the lower estuary was of the order of 6 m. while that in the upper reach was of the order of 3 m. The assessment of upland discharge by diverting the waters of the Ganga at Farakka was made with an eye to ensuring seaward transportation of the sediment beyond the critical stretch between Hooghly Point and Calcutta Dock System. It was also expected that by increasing the discharge from upland, the incidence of bores and navigational track shifts, which were positive impediments to navigation, could be minimised.

II

The total compartment of the river Bhagirathi known as the Hooghly, is behaviourally different from that of the Bhagirathi in as much as it has a two-way flow due to semi-diurnal tides while the Bhagirathi has a one-way flow with only discharges from upland. The Bhagirathi, in fact, was a spill channel of the river Ganga used to be stimulated only during the freshets and sustained by ground water during the lean months upto November. During the remaining months of the lean period i.e. from December to June, the river used to become virtually dry. This phenomenon made the navigational channel upto Calcutta from the sea a tidal creek, a situation which could lead to closure of Calcutta Dock System in the long run.

Apart from diminishing quantum of water from the upland, there are various other extraneous and uncontrollable factors that govern the river regime specially in the estuary, like salinity intrusion, geometry of the river, intensity of current, flow pattern, intensity and direction of wind, waves induced by the ships, Coriolis forces, littoral currents, sediment concentration and its characteristics. The persistent imbalance between the upland discharge and the tidal influx is the root cause of the complexity in sediment transportation and depositional pattern in the tidal compartment. Once the equilibrium of the sediment load and its movement is disturbed, the channel regime and the tidal propagation are affected in turn.

The river below Calcutta upto Diamond Harbour is dominated by flood flow. This means that the drift of sediment is landwards. During dry months ebb channels silt up and during wet months the opposite happens. The estuarine stretch of the river below Diamond Harbour has dominance of both flood and ebb flows. The boundary conditions responsible for the decay of the river are (a) duration of adequate upland discharge for a limited period of a year and (b) strong tidal influence throughout the year in the opposite direction.

The geological features of the off-take point of the river Bhagirathi deserve mention. For example, the course of the Ganga-Bhagirathi-Hooghly has not remained stable over the years. In fact, the river course in the deltaic region of the river has undergone shifts, braiding and meandering. The points of confluence of the tributaries have also shifted. The point of bifurcation of the Ganga below Farakka has not remained stable either. The bifurcation point was initially above Dhulian which later shifted to Suti and then to Giria. The shift of the bifurcation point has been eastward and as a result the desired quantity of water due to diversion is not available.

The reason for this shifting of bifurcation point might have been due to alluvial blanketing at the head of the off-take point or on account of tectonic changes or as a result of rebalancing processes in the delta due to change in river courses elsewhere (e.g. shift of the river Tista).

25. Grab Dredger at Lock Entrance

26. Boulder Placement for River Training

Other governing factors are no less important. The Bhagirathi has taken an obtuse-angled turn with reference to the main stream. This is perhaps due to level difference of the two rivers. The bed of the Bhagirathi is higher than that of the main course by about 5 mts. in the initial reach and acts as a barrier, making bifurcation of the main following along the path of least resistance.

It was evident that during the pre-Farakka Project period, there used to be a net movement of sediment towards the sea only during the monsoon. Whereas the situation in dry season was just reverse with net sediment movement towards the upstream direction especially in the region of the upper tidal compartment of the river Hooghly. This rhythmic variation in the predominance of flow during the monsoon and non-monsoon periods had contributed to gradual choking up of the upper tidal compartment which, in turn, affected the shipping channel adversely in course of time.

It was observed that during the monsoon months, uni-directional flow through the Bhagirathi used to extend into the tidal compartment. During the monsoon, when the river discharge generally went up to 200,000 cusecs, there was improvement in both the middle and upper tidal compartments as the flow became pre-dominantly ebb-oriented. The estuary received the on coming river sediments and allowed most of the sediments to disperse within the inner and outer estuary. The situation in the dry season, when the headwater monsoon discharge gradually ceased, there used to take place movement of sediment towards the upstream when the middle tidal compartment between Diamond Harbour and Calcutta and part of the upper tidal compartment were silted up because of pre-dominance of flood flow.

It was established after elaborate simulation studies that at least 40,000 cusecs of water would be required during the lean months from January to June to ensure sustained seaward transportation of sediment to reestablish the conditions that existed in 1936. Estimation was also done as to the quantity of head water needed to bring back the situation prevalent in 1924. It was found that an upland discharge of the order of 65,000 cusecs would be necessary for this purpose. 40,000 cusecs of water were also established as a need to replace the volume of saline water that intruded into the tidal compartment after 1936. The proponents of Farkka Barrage Project warned that if at least 40,000 cusecs of water were not made available during the lean months, the situation would go beyond redemption and the river would be destined to die its natural death sooner or later.

III

In the agreement between India and Bangladesh in 1977, it was decided that the Bhagirathi Hooghly would receive 40,000 cusecs only during the first 10 days in the month of January. The same agreement was renewed in 1982 and is supposed to be in vogue. The distribution of the Farakka waters, according to the agreement, was based on the average of 75% of waters that reached Farakka during the period from 1948 to 1973. Even after the renewed agreement, the lean season discharge falls far below the assured quantity.

As a result of the upland discharge from the Farakka, though less than what was assured, there have been certain favourable changes in the region between Calcutta and Hooghly Point. These are as follows :

a) Reduction in the number of bore days in the Hooghly;

b) Reduction in the quantum of dredging on the bars and crossings between Hooghly Point and Calcutta;

c) Lessening of frequency of shift of the navigable tracks on the bars & crossings between Hooghly Point and Calcutta;

d) Reduction in salinity and

e) Improvement in the capacity of the Hooghly between Calcutta & Hooghly Point.

The effects of Farakka waters so far received have not been able to influence apparently the estuarine reach of the river Hooghly. One of the developments is that, though there has been reduction in the quantum of dredging in the upper reach i.e. between Hooghly Point and Calcutta Dock System, the quantum of dredging in the estuary has almost doubled in recent years from 7 MM^3 to more than 14 MM^3 per annum. The critics of the Farakka barrage Project mentioned two points which are worth quoting. These are : (a) there were no plans to contain the sediments carried by western tributaries of the Bhagirathi specially the river Ajoy and (b) the strength and fluctuations of tides were not considered

in the upper reach of the Hooghly below Uluberia.

It requires to be pointed out that if the assured quantum of 40,000 cusecs of water is not released from Farakka, there may be possible economic losses on the following counts :

a) The amount already invested towards various corrective works and their maintenance in context to Farakka barrage Project would fail to produce the expected results.

b) The resultant fall in navigable depth would lead not only to traffic loss but would also cause increase in dredging quantum specially in the estuarine reach, perhaps with higher investments on river regulatory measures;

c) The benefits due to minimised bores and track shifts may not be sustained; and

d) Salinity intrusion limit will increase.

The change in geo-morphological situation which may be irreversible due to further curtailment of upland discharge may lead to substantial investments for dredging belying cost benefit aspects. In fact, any curtailment of upland discharge at this stage will make the entire economic and social situation irretrievably dismal and will ruin the economy of the entire country specially of the eastern region.

It is to be borne in mind that in a dynamic alluvial environment, there are apt to be changes. Meanders of the Bhagirathi are examples which show how a river changes its course. Not only the flux and the longitudinal and cross gradients, but the bank-and bed-lithology also plays a significant role in determining the course of a river. Studies based on satellite imageries in this area have been started in CPT to predict meander cut-offs. Moyapur cut-off near Nabadwip (91.45 km. from Calcutta upstream) occurred in 1988 and is now posing grave threats to Gouranga Setu down below. There has been another cut-off at Charchakindi Vishnupur (95 km. downstream of Berhampore) in 1994. Yet another at Dier Balagachi (35 km. Upstream of Berhampore) is imminent. All these cut-offs will have significant impacts on the river morphology in the Bhagirathi inducing more bank erosion and increased sediment load.

It is felt expedient that fresh studies should be initiated to determine the requirement of quantum of upland discharge necessary in the changed morphological situation for the preservation of the Port of Calcutta. This quantum may be more than 40,000 cusecs as assessed earlier to restore the 1936 situation. Question of construction of flood regulatory reservoirs at appropriate places of the tributaries of the Bhagirathi, specially on the river Ajoy, should also be seriously considered. Improvement of rivers like the river Rupnarain and the Haldi by dredging, which used to flush the Hooghly in the past, should be planned for implementation. The maintenance dredging efforts should be optimised through use of the state-of-the-art technology like sophisticated dredge monitors, automatic data logging facilities.

DREDGING OF THE GHUSURY SAND : SOME LESSONS

Tapobrata Sanyal & Kalyan Chakraborty

It is well known that a host of extraneous factors controls the regime of a tidal river. The Hugli river is no exception. Varying upland discharge from Farakka, changing tidal influx from the sea and the persistent imbalance between the two make the sediment distribution pattern extremely complicated. Dominant shoaling zones co-exist with the deep zones within the river. The behaviour of these shoaling zones and deep channels change seasonally and between the flood and the ebb. Besides the opposing flows experienced in the river, there are other factors which also complicate the behaviour of this tidal river. Calcutta Port Trust is in charge of conservancy of the river from Farakka upto the sea-face. However, it is only responsible for river-regulatory and dredging measures in the reach of the river below the Calcutta Dock System (CDS).

In order that navigability of the river upto the CDS can be maintained at a desired level, a judicious combination of maintenance dredging and river training works is a necessity. While execution of river training works does not pose any problem apart from the natural hazards which are unavoidable, disposal of dredge-spoil is really a constraint. Dumping of the dredge-spoil at selected spots within the river from where recirculation will be minimal, happens to be the only alternative to shore disposal. The reasons are (a) the entire river-side land from Calcutta towards the sea is built up, (b) navigational tracks (c) are to be kept open for movement of vessels and the turn-round time between the two successive dredging operations has to be minimal. Calcutta Port Trust normally does not undertake any dredging upstream of Calcutta Dock System though in the early eighties, Silt Trap Dredging was undertaken at the tidal apex of the Hugli river (at Balagarh, Dist. Hugli) to entrap sediments moving towards Calcutta.

On one occasion, however, dredging upstream of Calcutta Docks was performed in the period from 1962 to 1966 near Ghusury. It was intended to serve primarily two purposes, (a) to develop a low lying polder in the area east of Calcutta now known as Salt Lake City with dredged-spoil, and (b) to explore possibilities of improvement in the navigability and river regime downstream of Calcutta by such dredging. The operational advantages of this dredging were (i) the need to restrain ship movement would not arise and (ii) the distance of the area to be developed was not far off. The dredge-spoil could be pumped directly to the site. Both provided economical advantages.

II

The Hugli river at Ghusury, at a distance of about 150 km from the seaface at Sagar, (Fig.3) is tidal throughout the year. The tidal range varies from 5.5 m during the springs to 2.0 m during the neaps. Tides are semi-diurnal in nature with a periodicity of 12 hrs. 24 minutes. During the monsoon, flows of silt-laden water enter the river from the Bhagirathi and the western tributaries like the Ajoy, Babla, Pagla and Bansloi. The average peak freshet or monsoon discharge as measured at Kalna (about 105 km upstream of Calcutta) is of the order of about 1,00,000 cusecs. During this period, the flow is dominantly seaward.

In the dry season, there is depletion in the supply of upland water and hydraulic characteristics of this area are mainly governed by the tidal influx. In this period, particularly from mid-February to June, the flood tide preponderates and the movement of sediment is upstream. Between 1962 and 1966, some 19.0959 x 10^6 m^3 materials were dredged from the Ghusury Sand. Yearwise distribution of dredging is given in Table 1.

No significant change in the average grain size of the dredge-spoil was noticed during the 1st year. Later it was observed that with the increase in filling time of the hoppers, the spoils tended to become finer. A dredging programme was schematized (Fig.4) on consideration of hydrological observations as well as model studies, which was as follows:

a) dredging the sand near the cross-section 3(s) in the months June & July;

27. *Survey Vessel M.V. Krishan*

28. *Research Vessel Anusandhani*

29. Spur for River Training

30. Bank Protection

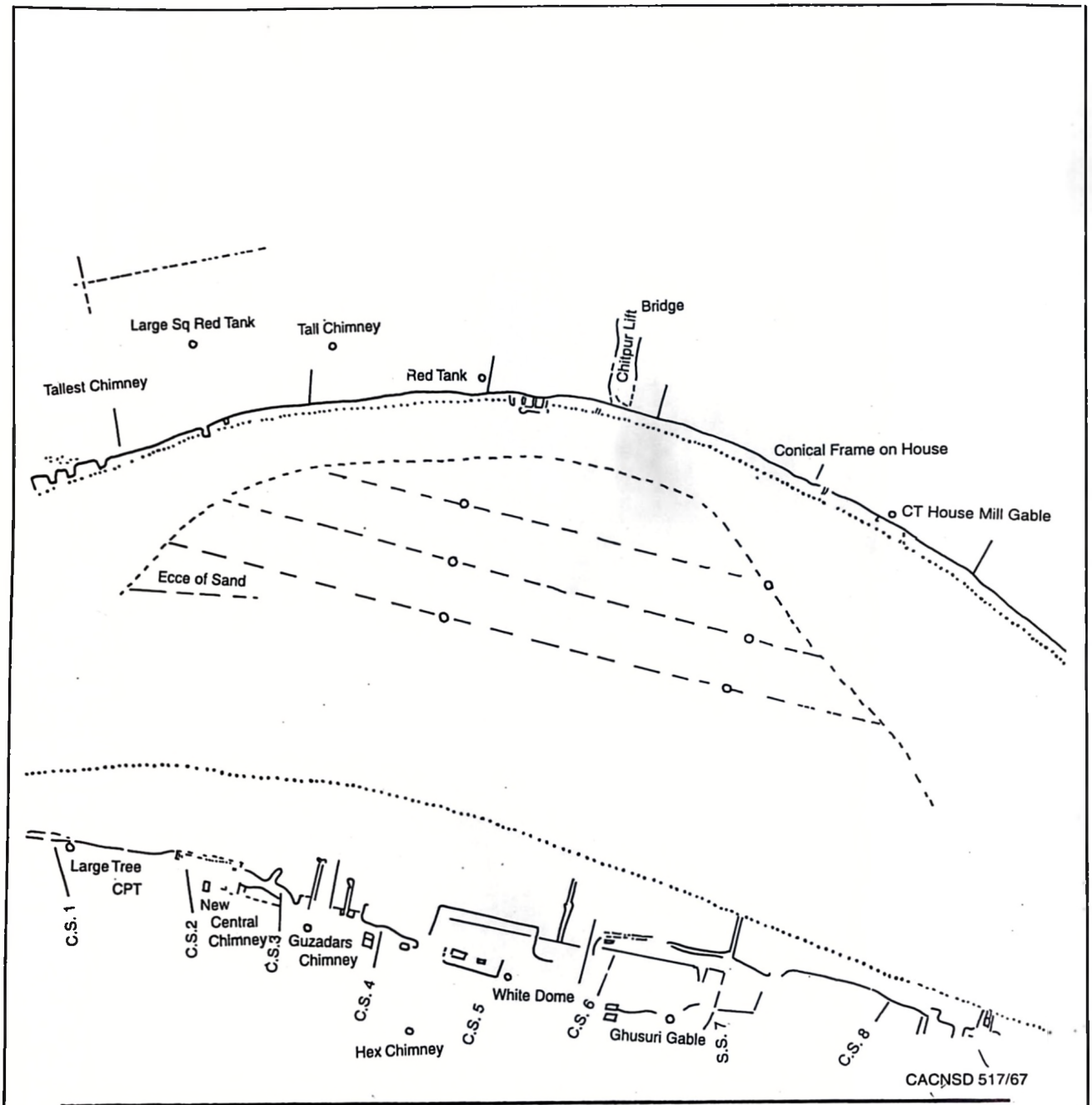


Figure 3 : Dredging Plan at Ghusuri Sands.

b) dredging the sand near the cross-section 5(s) & 6(s) in the months of August & September; and

c) following the sequence - October dredging may be confined to the tail region of the sand near the cross-section 7(s)

With the cessation of the monsoon and with the onset of strong flood currents during the dry season, the southern end of the sand-body showed signs of erosion. Furthermore, during the dredging operation, it was found that the natural filling of the dredged-cut varied seasonally. In the freshet, the rate of recuperation was quite fast, around 80% than in the dry season. The movement of the material was determined by regular survey of the river bed and from the measurement of dredged quantity pumped ashore from the barges.

Reclamation of the swampy Salt Lake areas started in 1962. The total area reclaimed was 12.35 sq. Km., out of which 9.71 sq. Km. was developed by dredged-spoil from Ghusury. The Salt Lake area as the abandoned channel of the river Bidyadhari was used mainly for sewage-fed fisheries. The bed level was raised by 7 ft [from 5.5(RL) to 12.5 (RL)]. Reclamation was done by pumping the dredged spoil through pipe lines and was ultimately completed in 1969.

III

The massive dredging operation over the Ghusury sand for 5 years raises some practical questions :

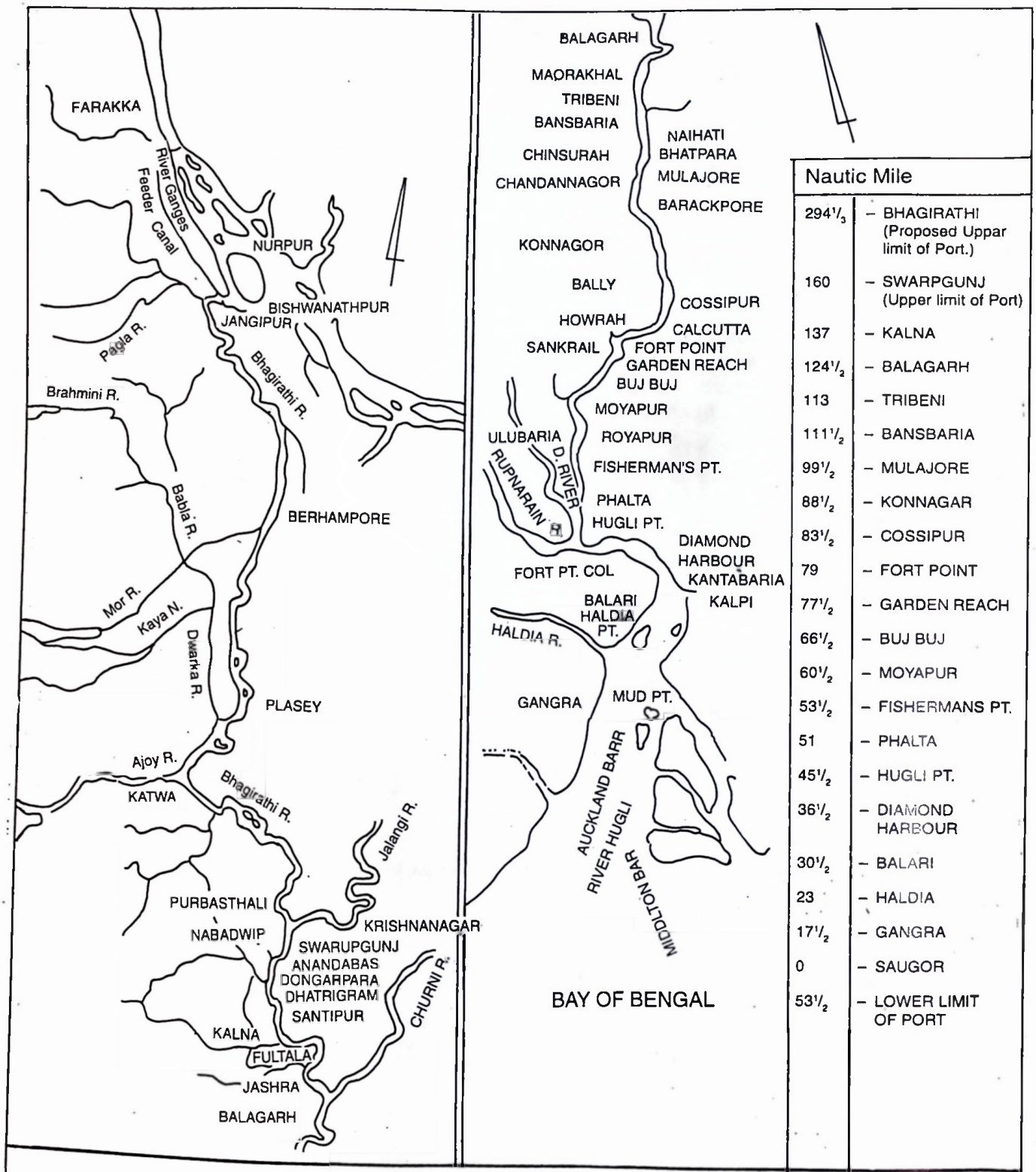
- Did the dredging affect the river capacity nearby ?
- Did this dredging influence the navigability over the bars and crossings downstream ?
- Did this dredging and subsequent filling-up of low marshylands have any impact on the environment ?

The volume below MTL (3.05 m) was considered as a parameter for comparison of the channel condition between pre-and post-dredging at Ghusury. For this purpose, two river reaches, one downstream and the other upstream of Cossipore area were considered. The downstream reach extends from Cossipore (c/s 1) to Damodar Outfall (c/s 126 s), a distance of about 60 km and the upstream reach extends from Cossipur (c/s 1) to Bansberia (c/s 149 N), a distance of about 50 km. It is to be noted that the Ghusury sand is in the downstream reach and dredging was mainly confined in between c/s 1 & c/s 10 s).

In the downstream reach, between Cossipur to Damodar Outfall, several bars and crossings are present on the navigational route from Calcutta to the sea. These are Panchpara, Sankrail, Pirserang, Poojali, Moyapur and Royapur. Cubic capacities of these reaches are available for a number of years (Table-2) and the plotted data shows that capacities during the post-freshet period are consistently higher than that of the pre-freshet period. The landward distribution of sediment by stronger flood tide in the dry season probably shoals up this reach resulting in decrease in capacity at the end of the dry season. To ascertain yearly variation of cubic capacities a mean line has been drawn which indicates a progressive fall in capacity upto 1961. From 1962 upto the end of 1966, the capacity shows an increasing trend. As the only additional extraneous factor influencing the river from 1962 was the Ghusury dredging, the increase in capacity in this downstream reach might be attributed to it. The capacity of the upstream reach available only for a few years (Table-3) shows net scouring during freshets and siltation during subsequent periods.

It has been reiterated that recuperation at the Ghusury sand mainly takes place during the freshets when about 80% of the bed-materials brought down by the freshets are trapped. In otherwords, it was a kind of 'Silt Trap' dredging which would desist the flow of sediments downstream. As a result, it is quite apparent that there would be an increase in capacity and of navigational depths over the bars and crossings. Furthermore, there should be gradual decrease in average grain-size of the bed-material dowstream of Ghusury sand since the commencement of dredging. Unfortunately no continuous data of grain-sizes are available for a particular place to substantiate this fact. But the depletion of coarse materials in the downstream reach between Cossipur to Damodar Outfall was evidenced by increase in depths at few bars and crossings where the deposition of coarser material generally takes place

Land reclamation by dredged spoil should be performed judiciously without adversely affecting ambient ecology. It appears that no Environmental Impact Assessment (EIA) study was conducted in connection with the Ghusury dredging and subsequent filling of the wet lands of the northern Salt Lake areas. From the environmental aspects, preservation of wet lands has now gained utmost importance specially in urban areas. The disappearance of wet lands creates



Nautic Mile	
294 1/3	– BHAGIRATHI (Proposed Uppar limit of Port.)
160	– SWARPGUNJ (Upper limit of Port)
137	– KALNA
124 1/2	– BALAGARH
113	– TRIBENI
111 1/2	– BANSBARIA
99 1/2	– MULAJORE
88 1/2	– KONNAGAR
83 1/2	– COSSIPUR
79	– FORT POINT
77 1/2	– GARDEN REACH
66 1/2	– BUJ BUJ
60 1/2	– MOYAPUR
53 1/2	– FISHERMANS PT.
51	– PHALTA
45 1/2	– HUGLI PT.
36 1/2	– DIAMOND HARBOUR
30 1/2	– BALARI
23	– HALDIA
17 1/2	– GANGRA
0	– SAUGOR
53 1/2	– LOWER LIMIT OF PORT

Figure 4 : Index Plan of Bhagirathi Hooghly River System.

not only ecological imbalance but also causes lowering the underground level and storage of water. Compatibility of the dredged spoil with the soil of Salt Lake area prior to its filling should have deserved greater consideration. Furthermore, Salt Lake area was a drainage basin prior to its reclamation. Had the environmental regulations been as stringent as they are now, the Salt Lake reclamation scheme through dredging would possibly not have received encouragement from the environmentalists.

The foregoing discussions lead to several conclusions. For example, effect of dredging over tidal bars, where perpetual sedimentation is a common phenomenon, is temporary. The improvements in the capacity or in mean navigable depths in the up-stream or downstream reaches are ephimeral since the supply of sediments from catchment areas during the monsoon is substantial, resulting in filling up of the dredged area in no time. Secondly, such type of dredging may be used for land reclamation in the vicinity of the developable areas close to the banks. This phenomenon reduces the cost of dredging as well as eliminates the problems of disposal of dredged materials. Nevertheless reclamation of wet lands should be made with utmost caution keeping in view the possible adverse effects on the ambient ecology.

Table - 1 : Dredging of Ghusury Sand

Year	Quantity
1962	2.2214×10^6 m^3
1963	4.0739×10^6 m^3
1964	4.3378×10^6 m^3
1965	4.2385×10^6 m^3
1966	4.2243×10^6 m^3

Table - 2 : Cubic Capacity of the Hugli river between Cossipur to Damodar Outfall 126(s) below 3.05 m KODS

Year	Months	Capacity in 10^6 Cu. m.
1957	May / June	413.18
	Nov. / Dec.	415.55
1958	May / June	409.60
	Nov. / Dec.	408.06
1959	May / June	409.51
	Nov. / Dec.	414.71
1960	May / June	407.75
	Nov. / Dec.	407.60
1962	May / June	385.27
	Nov. / Dec.	400.64
1963	May / June	404.70
	Nov. / Dec.	410.43
1964	May / June	399.57
	Nov. / Dec.	411.35
1965	May / June	411.50
	Nov. / Dec.	414.33
1966	May / June	405.84

Table - 3 : Cubic Capacity of the Hugli river between Cossipur and Bansberia 149 (N) below 3.05m KODS

Year	Months	Capacity in 10^6 Cu. m.
1960	May / June	150.62
	Nov. / Dec.	157.50
1961	May / June	148.33
	Nov. / Dec.	156.74
1962	May / June	146.80
	Nov. / Dec.	155.98
1963	May / June	146.04
	Nov. / Dec.	155.21
1964	May / June	150.62
	Nov. / Dec.	159.80
1965	May / June	148.33
	Nov. / Dec.	154.45

THE DEVELOPMENT OF THE RIVER HOOGHLY FOR NAVIGATION

D.M. McDowell

In this paper, the writer describes recent studies of the behaviour of the Hooghly river and estuary. This is done in the context of the long-term development of the Ganges Delta, which is discussed briefly. The development of the delta was largely un-recorded until the 18th century AD and although there have been many papers about it, comprehensive data do not exist. Of necessity, many ideas about evolution of the delta are conjectural, but there have been significant advances in knowledge over the past 30 years which are referred to.

II

Navigation from the Bay of Bengal to Calcutta was always beset by problems caused by strong tidal currents and shifting sands. Because of this, the Commissioners for the Port of Calcutta set up and maintained first-class departments for regularly surveying the river, for piloting vessels through the system and for maintenance of the bars and crossings by dredging and engineering works. Despite this, long-term natural changes were causing increasing difficulty in maintaining safe and economic navigation to Calcutta. To reduce the impact of these changes, studies begun in the 1950's to investigate the options for diverting flow from the Ganges during the dry season and of developing a deeper-water port nearer the sea.

In 1960, navigation from the Bay of Bengal into the Hooghly was through Beaumont's Gut, a central channel through the outer estuary Sandheads (Fig. 5). The deep channel forming the Gut terminated in a bar that had been gradually moving seawards and becoming shallower. A major sandbank that had been developing between the Haldia and Rangafalla channels since the 1930's had become an island (Nayachara) with a substantial area above normal high water of spring tides. The preferred channel to Calcutta was the western Haldia channel over Balari Bar; but as Nayachara developed, so the crossing over Balari Bar changed its alignment clockwise and became progressively shallower until, by 1960, there was only about 2.5m depth over the Bar below low water of spring tides. This severely restricted the sizes of ships that could operate to Diamond Harbour and Calcutta. The navigation channel was switched briefly to the eastern Rangafalla Channel, but instability of the channel and adverse tidal currents caused it to be abandoned after only a few weeks. Investigations into the possible development of a new relatively deep-water port at Haldia were complete and planning was well advanced. The port and riverside berths were to take advantage of the only area of deep water in the outer estuary that had been permanent since records began in the 18th century, apart from a short period in the mid 19th century; but access from the Bay of Bengal was threatened by deterioration of Beaumont's Gut.

Further upstream, there had been tidal changes throughout the 20th century, leading to increasing frequency of damaging bore tides upstream of Moyapur. Severe restrictions were placed on vessels moored in the river during the higher spring tides; by the 1960's, laden vessels had to be taken into Kidderpore or KG docks at Calcutta or moved down to Diamond Harbour until conditions were acceptable at Calcutta.

Seasonal reversals in the dominant direction of sediment movement resulted in shifting of the deepest channels on each of the major crossings between river bends after the start of each monsoon. With the onset of the subsequent dry season, the channels would gradually shift back. Unless this shift was carefully controlled by dredging, there could be serious loss of depths for navigation and intense remedial dredging would be needed. The worst problem of this kind had been resolved by construction of spur at Akkra, and another was being resolved by major re-alignment of the east bank at Fulta.

On the positive side, the River Survey Department had excellent records of tidal and depth changes extending back to the late 19th century. They undertook daily surveys of sensitive river crossings, annual pre-

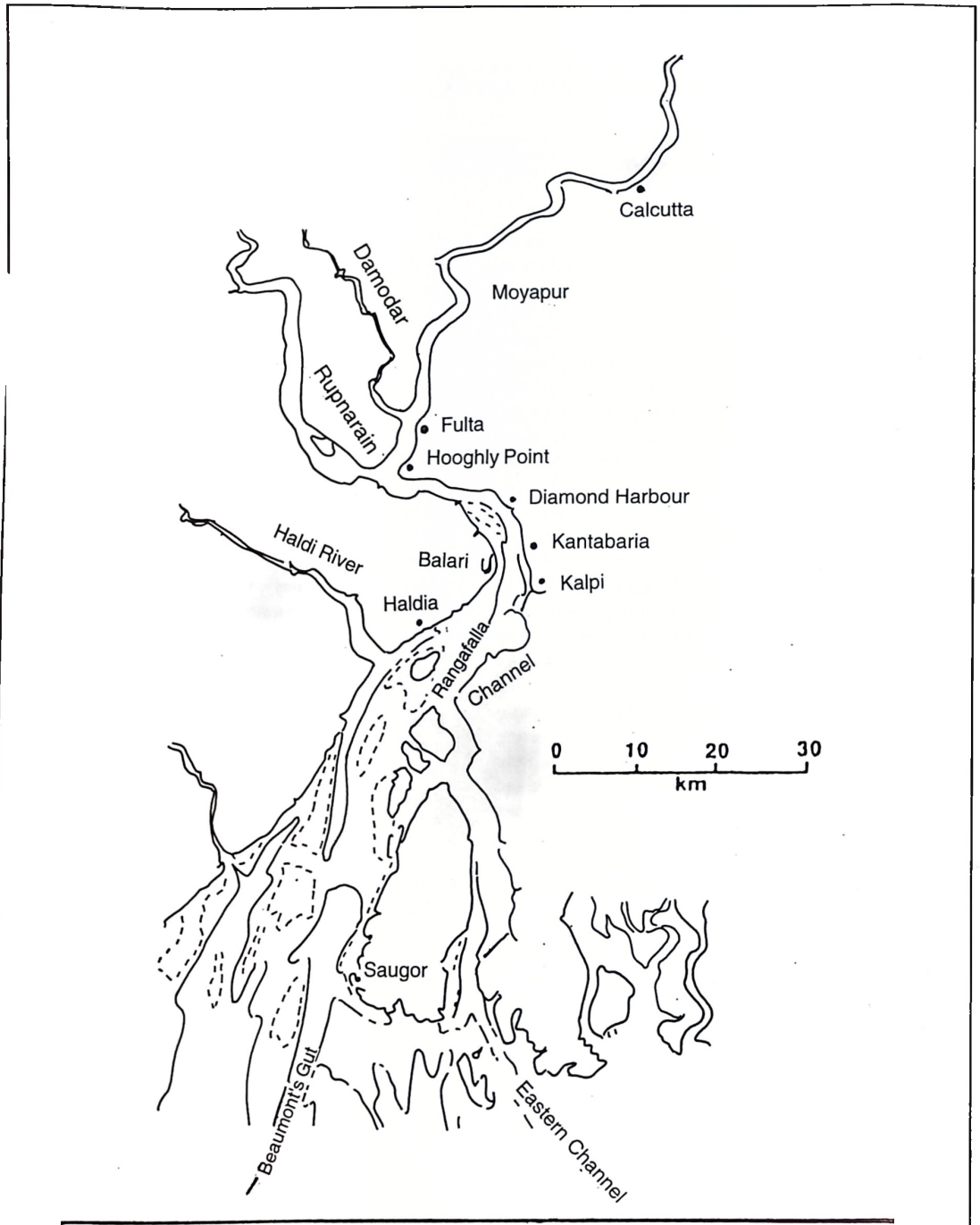


Figure 5 : The Hooghly Estuary

and post-monsoon surveys of the estuary from Calcutta to the coast and 10-yearly surveys of the whole system including the Sandheads. There was some information on river flows as well. The Deputy Conservator had an experienced and dedicated dredging section,albeit with obsolescent ships. A dredging specialist, P. Szawernowski, was advising the Commissioners on dredging policy and modernisation of the dredging fleet. The Chief Engineer was responsible for river training schemes, including major re-alignment of the clay bank at Fulta Point, opposite the mouth of the Damodar river. There were hydraulic models of the Hooghly at the Central Water and Power Research Station at Khadakvasla which had been built following a recommendation of Sir Claude Inglis, a former Director of the research station. These models had been used to study the river training works, including those at Akkra and Fulta. This was the situation when the writer went to Calcutta in 1960 and which led to establishment of the Hydraulic Study Department in 1962.

III

Before any major works are planned, it is necessary to determine how the existing situation arose; only then can plans for future development be made with any confidence. This is true of all major developments, but is particularly relevant to works on major watercourses. In the case of the Hooghly, it is immediately evident that the present configuration bears little relation to the present-day river and tidal flows and sediment sources. The abrupt change in direction at Hooghly Point gives the impression that the Rupnarain was once the major local river. The great sweep of the estuary past Diamond Harbour and Kantabaria Point is almost at right angles to its eventual direction when it joins the Bay of Bengal. Near Calcutta, Garden Reach is a link between old rivers - the Saraswati, fed from the western uplands, and the westernmost distributary carrying waters of the Ganges which may have formerly discharged into the Hooghly near Diamond Harbour and into the Matla estuary.

There have been several valuable assessments of the development of the Delta and its channels, written by people who had intimate knowledge of the river system and land forms. There was little hard evidence until the 18th century, though there had been reports on the major mouths of the Ganges and on the more important towns over 2,000 years ago. The Frenchman M.D'Aville produced a comprehensive map in 1751-52. Rennell made more accurate maps of the region in the 1770's and wrote appraisals of the development of the rivers (Rennell, 1781, 1793). The writer has learnt much from, among others, Reakes (1917), Addams Williams (1919) and Bagchi (1944). However, although all these authors were aware of the great sediment capacity of the feeder rivers, they had no quantitative information regarding the rate of delta growth and none of them were aware of the great changes in sea level that had occurred in the immediate pre-historic times. All based their analyses on the assumption that the Ganges was the primary force in development of the Delta. We now know that the Brahmaputra has been at least as important, and that its main source of water and sediment is not in its upper reaches in the Tibetan plateau, but in the Vale of Assam (Goswami, 1985). Moreover, the whole knowledge of plate tectonics, which provides an explanation for development of the Himalayas and the associated down-warping in the neighbourhood of Sylhet, is of more recent development.

In fact, the whole Ganges-Brahmaputra delta (Fig. 6) is very young and is undergoing rapid development. Recent work has shown that during the last ice age the land levels were up to 100m below present levels near Aricha and Sirajganj on the Jamuna river (shown by carbon dating of fossil wood fragments from deep borings) and it is known that ocean levels were about 100m below present levels. There is some evidence that the sea then covered much of the area which is now filled by the delta.

Work done by Goswami (1985) on the Brahmaputra in the Assam valley has shown this to be a major source of sediment — it has some of the world's highest annual rainfall in a region which includes rather loose sedimentary rocks. The rate of sediment discharged from the combined rivers Ganges and Brahmaputra is currently in the order of 1670 million tons a year, with the greater part coming from the Brahmaputra. This is equivalent to about 1000 million m^3 a year deposited in the delta and sea. The Ice Age ended some 12,000 years ago and sea level rose close to its present levels over the next 6,000 years. If sediment had been brought down by the rivers at the present rate during that period, there would have been more than enough to raise the whole delta by 100m to its present levels. Of course the picture was not as simple as that — much of the sediment flowed into the Bay of Bengal, and it is unlikely that the sea extended uniformly to the head of the existing

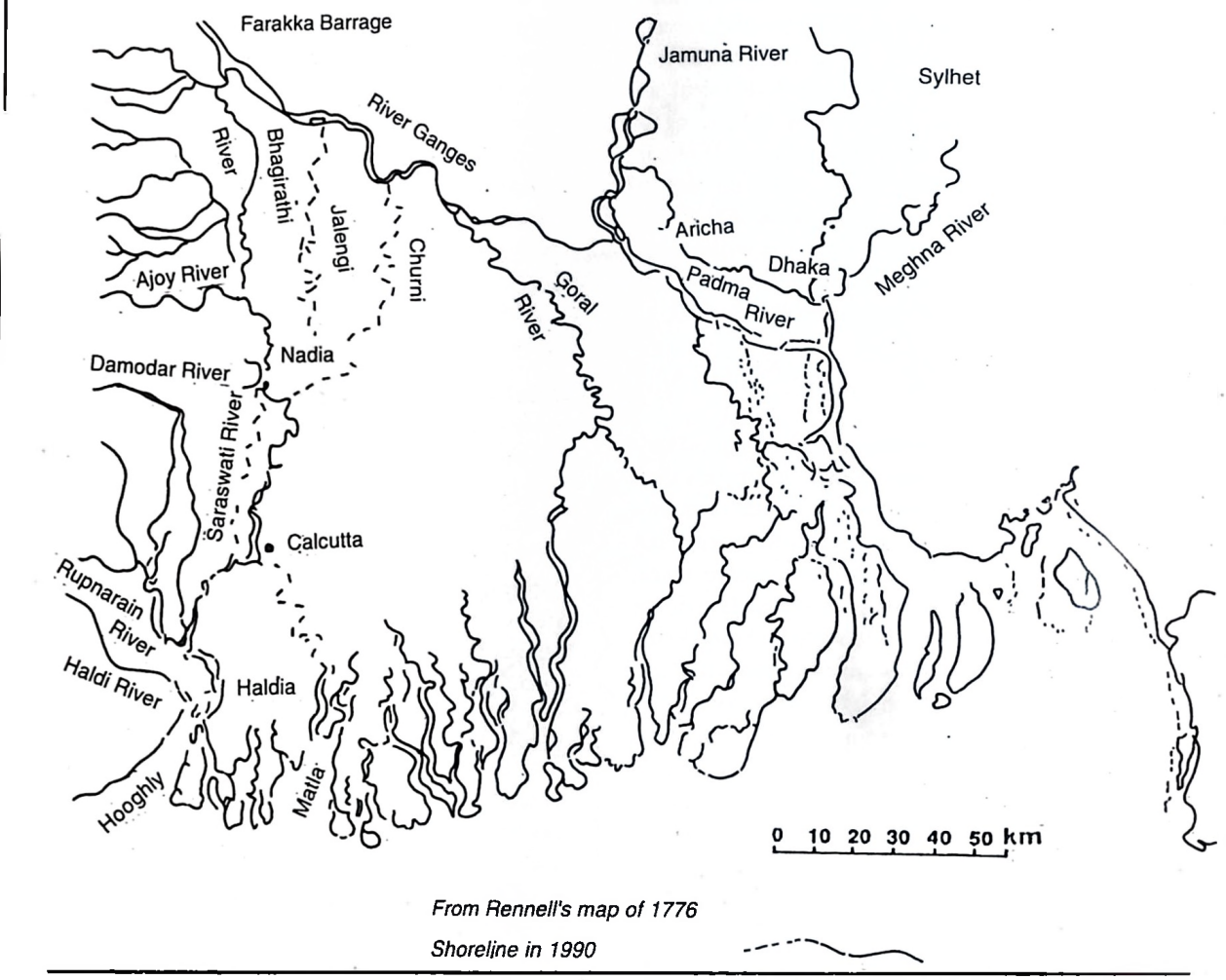


Figure 6 : The Ganges - Brahmaputra Delta

delta. During our studies of the Haldia channel in 1963, fossil wood fragments were found in hard clay less than 10m below the present Chart Datum. Nevertheless it does give rise to many serious questions regarding the development of the delta in the past and in the immediate future.

We think of the Ganges delta because during historical times the Ganges has flowed along its northern side and has been joined by the Brahmaputra/Jamuna as an apparent tributary from the north. In fact, the Brahmaputra carries the larger flow and much more of the sediment that builds the sea-face. Knowing that the sea level was once 100m lower and that it may have reached somewhere near the present alignment of the Ganges, we can construct a reasonable picture of the delta as it was then. Flow in both major rivers was much lower during the Ice Ages; the climate was drier and the lower temperatures would have almost eliminated the flows due to snow melt. The rivers draining the western uplands would have discharged some way into the area now occupied by the delta, forming their own alluvial fans of sediment where they reached the sea. The modern Haldi river, Rupnarain, Damodar, Ajay are the residues of such older rivers. The Ganges may have discharged into the sea near the head of the present Bhaghirati while the Brahmaputra flowed in a valley near of its present course, with floor level 100m below the older alluvial terraces to its east and west, entering the sea near the present confluence with the Ganges. The tidal estuary of the Brahmaputra would have extended into the present-day Jamuna, perhaps upstream of Sirujganj.

As temperatures rose there was a marked increase in rainfall and snow melt which caused the Ganges and Brahmaputra to carry large amounts of water and sediment into the sea. As sea level rose, the sediment deposits at the mouth of each river rose with it, gradually extending into the sea. Distributaries would have formed as deposits built up. One branch of the Ganges would have flowed down the western side of the region and would have captured the more northerly rivers draining the western hills. The other western rivers would have followed independent paths into the sea. The deposits from the Ganges would have included silt and clay which would have been deposited along its margins in backswamps. As these may not be easily eroded, they would have discouraged tributary rivers from joining the Ganges, perhaps causing the formation of the Saraswati running nearly parallel to the old Ganges, joining the course of the present Hooghly at Sankrail. The Ganges itself and its distributariers would have developed courses further to the east, with a major branch flowing past the site of modern Calcutta along a course close to Tolly's Nullah and into the Hooghly through Diamond Creek, while there was also flow past the site of Port Canning and discharging into the sea near the present Matla estuary. This is likely to have been the situation when sea-level first rose to present levels, some 6,000 years ago. In the meantime, the Brahmaputra would have been discharging sand and silt into the Bay, with the coarsest sediments depositing as the river entered the sea.

There are other forces acting on the delta which have influenced its evolution. We now know that the mass of the Indian continental plate is thrusting towards Asia, causing the Himalayan mountains to be pushed upwards, while the northeast corner of the plate is forced down in the Sylhet region of Bangladesh. As sea-level rose and the Brahmaputra built up the delta, so the path to the sea became longer and pressure arose for the river to divert into the Sylhet depression and so to the sea. Conditions were then such that the eastern bay had bed levels appreciably lower than the west, encouraging the Ganges to cut through the abandoned Brahmaputra delta and to begin to contribute its finer sediments to the eastern delta. Something like this must have been the state of the rivers after sea level rose to present levels 6,000 years ago. The rapid rise of sea level probably exceeded the rate at which sediment could have built up the land, so the coast is likely to have been near Jessore in the centre, with land building rapidly to the west and east. There is some evidence from 2,000 years ago that there was a very large mouth of the delta in the vicinity of the present Matla, suggesting that some or all of the Ganges flow was still following the western route to the sea. Spill channels from its left bank would have built up the western side of the delta.

By the 18th century, the major Ganges channel was close to its present channel and the spill channels were from its right bank, while the Brahmaputra flowed past the Sylhet depression, then swung east of Dhaka to the sea. The much smaller Meghna drained the northeastern hills and all three rivers had separate mouths in the eastern delta. This is all clearly shown in maps produced by D'Aville and by Rennell in the 18th century. Shortly after Rennell's mapping, the Brahmaputra, having largely filled the Sylhet depression, switched to its old path between the slightly raised Rajshahi block and the

Madhupur Jungle, shown on Reake's maps of 1915. The rivers Ganges and Brahmaputra had then combined to form the Padma at their present confluence, while the Meghna joined them southeast of Dhaka.

There has been considerable extension of the land at the seaface over the past 200 years, consisting of infilling between the islands to the east of the lower Meghna and, particularly, extension of the large island between the Tetulia and Lower Meghna rivers towards the southwest. In 1793, Rennell had reported that the two westernmost branches of the Ganges, the Bhagirathi near Cossimbuzar and Jalenghy, united to form the Hooghly.The only distributary that carried pernnial flow was the Chundnah — the modern Gorai. The Bhagirathi was dry from October to May, while the Jalenghy had a stream for the whole year, but was unnavigable for 2 to 3 months in the driest years. Significantly for the Hooghly river, when the Brahmaputra first joined the Ganges near Aricha, within a decade or so of the year 1800, it caused a considerable backwater effect, leading to rise in level of the Ganges upstream of the confluence and flow throughout the dry season down the Bhagirathi.

Below the confluence of the Ganges and Jamuna, the channel of the Padma gradually enlarged in response to the increased flow and as it did so, the backwater effect reduced. Water levels at the Bhagirathi and Jalengi offtakes also fell until, by 1915, River Surveyor Reakes reported that there was no longer continual dry-season flow into them. This has had serious consequences; during the dry season, tidal dominance has caused progressive sedimentation in the upper reaches of the tidal Hooghly. The situation was made worse by construction of many embankments which restricted flooding of land during the wet season, but in doing so, confined the tides to the main estuary channels. These were the primary causes of the increase in tidal range and in severity of bore tides in the upper Hooghly estuary. The Farakka Barrage was designed to offset this development (Mookerjea, 1975).

Extension of the land at the sea-face of the eastern delta will eventually enforce changes in the upper rivers. If sea levels continue to rise at present rates the change might be accelerated, causing increased flow in the distributaries which take off from the main rivers, such as the Gorai. While there is no immediate cause for concern, this is a situation that could eventually have significant effects on the Hooghly and should be kept under occasional review.

IV

When the Hydraulic Study Department (HSD) was set up in 1962, two of the immediate problems had been solved for the time being. Navigation from the Sandheads had been switched from Beaumont's Gut to the Eastern Channel and training works on the Diamond Sand shore had led to considerable improvement to Balari bar. It was recognised that these were not permanent solutions (there are no such things in these rivers) ; but it was expected that coordinated and comprehensive studies would enable future problems to be anticipated and measures taken to minimise them. In the meantime, work had begun independently on the new port at Haldia and on the Farakka Barrage which would ensure perennial flow of fresh water into the Hooghly. The HSD was fully equipped with the necessary vessels and instruments by 1963. Its first tasks were to build up knowledge about the hydraulic forces affecting the river, after which there was serious planning of training works to stabilise the channels between Hooghly Point and Calcutta, where the dry-season discharges from the Farakka Barrage would have some effect. The problem of access from the Bay of Bengal was of a different order, because the channels in the Sandheads were affected by wave action and littoral movement of sediments which may have come from rivers discharging from the coast of India south of the Bay. It was necessary to use a seaworthy ship to study these forces, taking into account the important effect of monsoon flows and wave action. The research vessel *Anusandhani* was designed for this work and was operational from 1963.

The early work of the Hydraulic Study Department was directed towards more complete understanding of the sources of sediment and the hydrodynamic forces that gave rise to erosion and deposition on the banks and channels. It could be divided into work in the Sandheads region and in the estuary. In the Sandheads, the primary task was to understand the evolution of the sandbanks. Examination of historical charts had shown that there was migration of the tails of the sands towards the east, with new formations replacing the old over a period of several decades. Extensive sampling of minerals in the Hooghly and Rupnarain had shown that some heavy minerals present on the bed were characteristic of each river (Shanmugam, 1966). In particular, zircon in the Hooghly had rounded particles, doubtless as a result of abrasion as they were brought

down from the Ganges, while zircon particles in the Rupnarain were much more angular. The ratios of rounded to angular particles of Zircon in bed samples from the outer estuary would show the relative magnitude of sediment contributions from the upper Hooghly and the Rupnarain. Similar techniques of heavy mineral analysis were then applied to 84 samples of bed sands obtained from a grid with 80 km sides covering the whole Sandheads region. The analysis showed that sand from the south-west was carried across the face of the Sandheads and appeared off the coast of the Sunderbans. A major source had been the Mahanadi river, the behaviour of which had just been changed by construction of the great Hirakud dam. This was encouraging. The Eastern Channel had just been opened for navigation and any reduction in the rate of supply of sand from the south-west could result in easier management of channels through the outer estuary. At that time, it appeared that it would be necessary to deepen the Eastern Channel by dredging over a distance of 15 n.miles to take full advantage of the depths at Haldia.

The heavy mineral analysis also showed that the main ebb channels — Beaumont' Gut and, to a lesser extent, the Eastern channel — were affected by sediment brought down the Hooghly, and that sediment from the Subarnarekha river accumulated west of the mouth of the Hooghly and migrated across the channels to the coast of the Sunderbans. Further sampling was done from the coast between False Point and the Hooghly and this confirmed the trends shown by the major sampling and helped the sources of the characteristic minerals to be identified.

In the Hooghly river, a programme of measurements of velocity and water sampling built up a better understanding of the hydraulic behaviour of the system. Radioactive tracer experiments showed the very rapid rate of sediment movement in the main river and also showed the extent to which tidal currents carried sand into the Rupnarain during the dry season. This gave support to a finding of the mineral analysis in that river; sand grain sizes diminished from its mouth upstream, contrary to the trends further up the river, where grain sizes diminished downstream after each tributary joined the main river.

V

At this point it is appropriate to review the situation as it was in 1964. There had been many changes that would have a direct effect on the evolution of the Hooghly:

a) The distributary rivers which fed the western delta from the Ganges were decaying. Those feeding the Hooghly had been cut off from the Ganges during much of each dry season since 1915.

b) Extensive construction of embankments intended for land reclamation and control of flooding had confined tidal flow to the main estuary channels, causing tidal range to increase in the upper reaches of all estuaries in the western delta.

c) The Hirakund dam had been constructed and had brought about a major change in the hydrograph of the river Mahanadi, with potential for major reduction in sediment discharged near False Point.

d) A series of dams had been constructed in the Damodar valley which had the effect of greatly reducing peak flows and the mass of sediment brought down to the Damodar and Rupnarain rivers and into the Hooghly at Hooghly Point.

e) New bridges were being constructed across the Rupnarain to provide access to Haldia. Their piers would have an appreciable effect on local flow resistance and tidal propagation.

f) Reclamation of the foreshore opposite Diamond Harbour had enabled re-alignment of the crossing of Balari Bar with improved depths.

g) Major work had been done to straighten the Hooghly just upstream of Hooghly Point by dredging the eastern bank at Fulta.

h) Construction of the new port and infrastructure had begun at Haldia.

i) Work was just beginning on construction of Farakka Barrage which would ensure flow of fresh water down the Bhaghirathi during the dry season. However, dry-season abstraction of water from the Ganges upstream of Farakka has reduced the quantity available at the barrage for this purpose.

j) There was a slow rise in global sea level that had begun in the 19th century. This was continuing, but in 1964 the extent of the possible threat due

to global warming had not been appreciated.

k) Sediment brought down by the rivers was causing the sea-face to extend seawards, especially in the eastern delta. While this would eventually give rise to major re-alignments of the rivers, there is no immediate threat to the western delta from this cause, apart from the gradual evolution of the Sandheads.

It is evident that nearly all the forces that had formed the Hooghly channels as they were in 1964 had undergone change or would do so in the immediate future. Although examination of past developments gave invaluable insight into the mechanisms at work, it only had limited relevance to the future. There were many new questions and the task of the Hydraulic Study Department was to gather data and analyse them to provide answers. The results of their work would take the form of schemes for river training and/or dredging where appropriate.

In some cases, factors outside the control of the Calcutta Port Commissioners would affect the Hooghly. Control of dams and barrages are one example; but there are also works carried out by riparian authorities which could reduce tidal volume by reclamation or could divert flows into new tributaries. One case concerned development of the new port at Haldia. In 1962, the writer and Chief Engineer T.M. Malkani attended a planning meeting representing the CPC. The main purpose of the meeting was to consider plans for fresh water supply to the new port. It was proposed that a barrage could be built to impound water in the Haldi river. It was pointed out that this would almost eliminate the tidal volume of the Haldi river and would remove the one factor that was ensuring that deep water would occur at the Haldi river entrance. It also had a significant effect in ensuring that there would always be a strong flood-tide current on the western side of the estuary and over Balari Bar. The plan was dropped for the time being, but a dam was built later in the upper river, known as the Kangsabati. It is inevitable that there has been reclamation of land for the new port, township and industrial installations that will have further reduced tidal capacity of the Haldi river and catchment. Such developments were unavoidable, but they have considerably reduced the flushing power of the Haldi river, making it more difficult and costly to maintain depths in this region. A careful balance has to be made to determine costs vs benefits in such cases.

Despite the many changes that were taking place, there were encouraging signs. There had been a reduction in the quantities of sediment from all sources entering the Hooghly estuary, which suggested that, for the forseeable future, it should be easier to maintain depths in the approaches to Calcutta. Perhaps the most demanding problem would be control of channel adjustments and bank erosion due to seasonal flows. In the absence of large annual influx of sediment from rivers and the sea, bank erosion, channel widening and potential change in tidal propagation would also become increasingly significant.

VI

For the first 10 years of its life, the Hydraulic Study Department carried out a detailed study of the development of the Hooghly and of the forces that were governing it. The culmination of this period of work came in the presentation of a master plan for training of the system, prepared by Chief Hydraulic Engineer, Dr.S.K. Bhattacharya (1967, 1973a,b). These give excellent and detailed accounts of the behaviour of the tidal system and contain proposals for training works that would benefit the whole system. It built on previous work done by the River Survey Department prior to 1962 and incorporated the latest data obtained under the programme of field measurements.

The study confirmed that the upper river between Calcutta and the tidal limit near Nabadwip was suffering progressive deterioration in tidal capacity as a result of the greatly reduced flows down the Bhagirathi, particularly during the dry season. Tidal dominance was re-distributing bed sediments upstream during the dry season, causing increased reflection of the tidal wave, increased severity of bore tides which, in turn, accentuated the landward movement of material. It is probable that construction of the Vivekananda Bridge caused acceleration of the deterioration for a time during the 1930's. This deterioration was having a serious effect, causing increased bore tide activity extending downstream of the port of Calcutta. This caused serious difficulties in the port area and extensive damage to riverside installations. Construction of the Farakka barrage was only just completed in 1973, and had been designed for the express purpose of halting this deterioration by ensuring supply of fresh water throughout the dry season to counter the tidal dominance in the upper reaches.

There was a parallel with the history of the Matla estuary and Port Canning, in which decay of feeder channels cut off fresh water flows. There was a marked increase in tidal range and rapid siltation of the upper Matla estuary in the late 19th and early 20th centuries, resulting in the abandonment of Port Canning.

The reports of the Hydraulic Study Department contained proposals for stabilisation of the major bars and crossings between Calcutta and the sea. Between Hooghly Point and Calcutta, this would be achieved by construction of spurs that would restrict the seasonal migration of the deepest water at each crossing. This has been successful and has contributed to the recent revival in the fortunes of the Port of Calcutta.

Management of the channels in the outer estuary calls for different methods. Proposals were put forward in the Chief Hydraulic Engineer's report of 1973. The scale of the system is vast and the evolution of the channels cannot be prevented, even at very great cost. There were three major problem areas, (a) Balari Bar at the head of the flood-tide dominated Haldia Channel, (b) Auckland Crossing downstream of the ebb-dominated Rangafalla Channel and (c) the sea approach, currently the Eastern Channel. Engineers have to work with nature and attempts to make it conform to some rigid plan will fail. Flow can be guided from upstream. This, in itself, requires different approaches in channels dominated by flood or ebb tides. The 1973 proposals were designed to control widening of the estuary in the reach containing Nayachara by bank protection; to improve flow over Balari Bar by construction of spurs on Kantabaria and Jiggerkhali Flats and to construct major spurs and guide banks to concentrate and guide flow over Auckland Bar. They are well described in the CHE's report and will not be recounted further here.

VII

The problem of navigation to the port of Calcutta has always been access for deep-draft ships. Construction of the port at Haldia was an attempt to ease this problem, though it was clear when it was planned that there would be quite serious limitations due to the outer bars. The situation has changed now. It has proved difficult to maintain depths in the Haldia channel and over Balari Bar, for several reasons. One is undoubtedly the reduction of tidal flow into the river Haldi. This was inevitable; it is not possible to build a new industrial/port facility on low-lying land without excluding flood waters from the sites and this inevitably meant loss of tidal capacity. It was compounded by the need to impound fresh water, which again resulted in loss of tidal capacity in the upper reaches. This was inevitably followed by sedimentation due to reduced tidal energy and further loss of capacity. Another reason for failure of control of Balari Bar was an attempt to train the ebb by dividing flow at the head of Nayachara by means of a spur. This created an unstable situation and rendered control by dredging difficult.

There is a conflict between the requirements for navigation to Calcutta and to Haldia. Good conditions on Balari would resolve this conflict, but poor conditions on Balari and in the Haldia channel force them to be separated. There are no simple alternatives. At the root of the problem are the changes that have taken place following the initial development of the port at Calcutta. The headwaters have deteriorated and will continue to do so due to sedimentation from the Ganges. Reduced dry-season fresh water discharges cause re-distribution of sediment upstream; this effect has been alleviated by flow from the Farakka barrage. On the other hand, total sediment discharge into the tidal system has been greatly reduced; deterioration of the Bhagirathui, dam construction in the Damodar Valley and the Hirakud dam have all contributed to this.

The natural tendency in a tidal system that has been deprived of sediment influx into its headwaters is for re-distribution of sediment by tidal action, as in the Matla. The downstream reaches may widen and the channels initially deepen. The eroded sediment is carried upstream and deposits in the upper tidal reaches. These changes cause increase in tidal range in the inner estuary, which accelerates the redistribution of sediment and causes bank erosion in the middle reaches. The problem is exaccerbated by bank construction and reclamation which cause flow to be concentrated in the tidal channel.

All these tendencies have been observed and monitored in the Hooghly and Farakka barrage and the training works upstream of Hooghly Point have been built to offset them. However, there is considerable advantage from the reduction in sediment influx from the Damodar/Rupnarain and from the Mahanadi. Growth of the western delta is now rather slow and it is likely that the sandheads will change less rapidly than formerly. Control of the outer approach channels by dredging and by the training works constructed near

Auckland Bar should result in greater drafts and more stable channels than before.

There has always been a tendency for the estuary between Hooghly Point and Auckland bar to widen, but that has been offset by influx of fresh sediment, particularly from upstream, resulting in periodic shifts in the deep channels and growth and decay of shoals and islands. The reduction in sediment influx has reduced the capacity for deposition to occur and measures will be needed to control excessive widening. In fact, this has already been attempted following the recommendations of the Chief Hydraulic Engineer in 1969. There are potential advantages in the present situation; greater channel stability and improved depths are possible.

One can speculate about possible developments that would take advantage of the present conditions. It should be possible by now to see the reaction of the outer channels to the changes since 1960. If an out channel — probably the Eastern Channel — is able to sustain reasonable depths without excessive dredging, it might be possible to re-consider a deep-water installation in the Hooghly. It may be that the route through Auckland bar and up the Rangafalla channel is now suitable for use as the main navigation channel and that Balari Bar can be abandoned. There should then be depths available to Diamond Harbour that would at least equal those formerly available at Haldia. The future looks promising !

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ORGANISATION OF THE PORT & IT'S TASKS

Like in many other institutions, the organisational structure of the Calcutta Port has undergone many changes over the years. In 1870, the Commissioners of the Port of Calcutta, functioning as the Board, was constituted of nine members including the representatives of the Government. Today, this Board is known as the Calcutta Port Trust (CPT) composed of nineteen members. This conversion of the Board took place under the Major Port Trust Act of 1963 as modified upto 1975. Between 1870 and 1921, the Chairman of the board (i.e. of the Commissioners of the Port of Calcutta) was drawn from the Revenue Department of the Government of Bengal. The Vice-Chairman acted as the Chief Executive. After 1921, the Revenue Department did not provide the Chairman. The Chief Executive of the port was made the Chairman. Today, the Chairman is still the Chief Executive as well as the Chairman of the Board of Trustees. He is assisted by two Deputy Chairmen, one for the Calcutta Dock System (CDS) and the other for the Haldia Dock Complex (HDC). Unlike the CDS, the Deputy Chairman of HDC is assisted by two General managers in charge of defined functional areas. At the CDS, there are fourteen Departmental Heads.

There exists the work of Dr. Nilmoni Mukherjee (*The History of Calcutta Port*) on the history of development of the organisation of this port. The functions of the departments and their roles keep on changing with time. In Table - 1, gives a short description of the current major functional areas of the port.

TABLE - 1 : FUNCTIONAL AREAS AT CDS & HDC

FUNCTIONAL AREA AT THE CDS	DESCRIPTION OF MAJOR FUNCTIONS
Administration	Administrative and policy issues, personnel, environment, Board matters, Public Relations and Security
Finance	Receipts & disbursements, financial planning, management & control, financial advice
Traffic	Traffic operations, handling, storage & clearance of cargo, direction and control of labour, management of trade relations
Civil Engineering	Planning and execution of civil engineering works and their general maintenance, River Training Works.
Marine	Pilotage, dredging, river conservancy and matters relating to navigation, survey, vessel repairs etc.
Mechanical Engineering	Maintenance and repairs of all mechanical, electrical and marine equipment including the CPT flotilla, locomotives, pumping and hydraulic power installation, lock entrance mechanism & electrical sub-stations and planning & execution of related developmental work
Materials Management	Purchase and control of stores, equipment, building materials, management of inventory, disposal of condemned materials.
Medical	Management of hospitals, medical care of port employees and administration of health service

Contd.

TABLE - 1 : FUNCTIONAL AREAS AT CDS & HDC	
FUNCTIONAL AREA	**DESCRIPTION OF MAJOR FUNCTIONS**
AT THE CDS	
Hydraulic Study	Studies in all aspects of river, problem of siltation, integrated planning and improvement through dredging, computerisation.
Estate	Management of Port estates
Legal	All legal matters and related advisory functions
Labour and Industrial relations	Industrial relations, staff welfare, sports & games and advisory functions
Planning	Plan formulation and project monitoring, marketing, management information system and management of Maritime Museum and Training Centre.
Vigilance	Vigilance and anti-corruption matters.
AT THE HDC	
General Manager (Management & Services)	Finance, Material Management, Personnel and Industrial Relations, Administration & Medical Divisions of HDC
General Manager (Operations)	Shipping & cargo handling, railways, plant & equipment, infrastructure & civic facilities and marine operation divisions
Finance	Financial advice and controls, internal audit, receipts and disbursements, preparation of accounts, preparattion of Annual Revenue and Capital budgets, etc.
Material Management	Inventory planning and control including procurement, storage, distribution of various materials, management of stores, scrap yards and disposal of condemned materials.
Personnel and Industrial Relations	Planning and control of human resource development, establishment, training, induction, promotion, welfare, industrial relations, implementation of related social and labour legislation
Administration	General administration, management and control of the port estate, port marketing, public relations, coordination in legal matters, fire security, statistics, management information, hired transport, telecommunication, plan formulation and monitoring.
Medical	Management of port hospital at Haldia, dispensaries, medical care of port employees, etc.
River Training Cell	Implementation and maintenance of river training works in the vicinity of Haldia under the supervision of Chief Hydraulic Engineer, Calcutta Port Trust
Shipping & Cargo Handling	Planning, operations and related commercial work including onboard cargo handling for Berth numbers 6, 7, 8, 9, & 10, also responsible for such operations at Berth No. 3 excluding POL and thermal coal.
Railways	Operations of the Port Railway System at HDC, servicing of all siding holders, movement of rail-borne traffic to & from the Port including railway commercial work.
Plant and Equipment	Maintenance and operation of different plants, equipment, floating crafts, lock gates, cargo handling equipment, locomotives, ship planning and cargo operations at Berth No. 3 (only for thermal coal), 4 and 5 and related commercial township

TABLE - 1 : FUNCTIONAL AREAS AT CDS & HDC (CONTD.)	
AT THE HDC	
Plant and Equipment (Contd.)	commercial activities connected with operations, maintenance of power houses, sub-stations and distribution of electric power in the dock areas and township.
Infrastructure and Civil Facilities	Planning, construction and maintenance of civil works and concerned civil engineering functions, construction and maintenance of berths, sheds, buildings, roads, etc., plantation and gardening.
Marine Operations	Coordination and movement of vessels to and from Haldia including berthing of ships.

II

There are many functions of the CPT which are quite common in the other ports of India. What is most uncommon about the Port of Calcutta is its location on a river many miles away from the sea-face. To keep the cargo moving, the vessels need special assistance which this port has to provide. It is difficult to comprehend the variety of facilities required in this regard. A brief enumeration of these are attempted below.

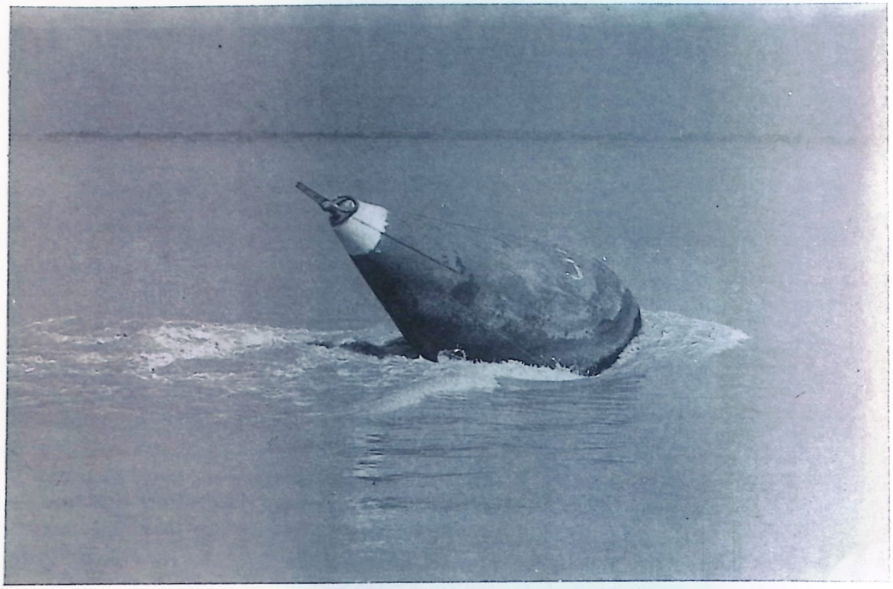
To show the alignment of the navigational channel, especially during night, lighted markers are needed. There is one *lighthouse* on the Sagar Island (21°39'N & 88°3'E). Four unmanned *light vessels* are placed to the south of the Sagar Island at distances of 18.5 km., 32.3 km., 55.72 km. and 86.53 km. from the Sagar Lighthouse. The navigational channel of 232.28 km. from Sandhead to Calcutta/Haldia is marked and lighted by light vessels, unmanned light vessels, boat buoys, lighted and unlighted buoys for safe navigation of vessels. These lighted units use power from battery or dissolved acetylene gases. These are maintained by a Lighting Officer in the Dredger and Despatch Service. To help facilitate position fixing in relation to visible objects on shore, *Syledis Chain System* covers the length of the channel from Sandheads to Hooghly Point over a distance of 175 kms. *Differential Global Positioning System* is being considered as replacements of the existing system.

Signals from the shore are needed to convey other messages. Wireless VHF network now connects various wireless stations as well as CPT vessels operating on the river. Such nodes also exist within the different dock systems. More old fashioned are the Semaphores displaying rise and fall of tides in the channel. This information is vitally needed for navigation where draft is of critical importance. Such stations are located at Kidderpore, Rajabagan, Akra, Moyapur, Hooghly Point, Balari, Gangra and Sagar. Then there are the automatic tide gauges at Tribeni, Garden Reach, Diamond harbour, Balari, Haldia and Sagar. The data recorded round the clock is used for prediction of tides and preparation of tide tables by the Survey of India.

Information alone may not appear adequate for a modern ocean going vessel to navigate through the river. These need guides. So the CPT has two pilot vessels which carry the pilots to reach the ocean liners. Then there are the Despatch Vessels which maintain the river markers, buoys and shore lights, and occasionally carry provisions and water to the vessels. Sometime these provide towage to ships in distress. This job is otherwise done in the river by seven river tugs and by eleven dock tugs. To lay anchors, there are the two anchor vessels. In addition, there are eleven harbour dock launches to carry out odd jobs

As draft in the navigational channel is continuously getting modified by sedimentation, the CPT maintains two River Survey Vessels, nine Survey Launches and two Research Vessels to conduct hydrographic surveys and processing of the data so collected. Based on the findings, dredgers are deployed to moderate the effects of sedimentation. The CPT has three large suction dredgers, three grab dredgers and one bucket dredger. In Table-2, an assessment of the quantum of dredging done in the channel has been shown.

Apart from dredging, considerable amount of river training works are also undertaken by the port since



31. Buoy as Marker

32. Buoy as Marker

dredging alone cannot stabilize the channel and provide desired depths. For maintenance of the navigable channel, directing the flow in a desired manner is needed for which accurate training and control measures are necessary. Some of the river training measures adopted by this port are spurs, guidewalls, bank protection, silt trapping and shore disposal. Construction of a 2.8 Km. long guide wall and across-spur with allied construction has just been completed..

Till 1987 ships calling at Calcutta had used the Haldia/Balari Channel which is just upstream of the Haldia Dock Complex, Balari bar remains a perpetual hindrance to navigation and it is the governing bar for the navigational channel leading to Calcutta Dock System. The malady of shoaling, due to the extension of Jiggerkhali Flat, a stretch of sand on the north of Haldia, had caused deterioration to the Balari crossing. The engineering measures thus remained the only palliative solution for improvement of the bar. With the execution of river training works, diversion of flow towards the Haldia-Balari channel had started under the Comprehensive Scheme of river Hooghly since 1982. At present the Port is using the Rangafalela Channel. There has been gradual improvement in the drafts for CDS and HDC.

To have a macro-scale study of the morphological changes of the river system from the Farakka Feeder Canal outfall near Jangipur to the sea-face, a distance of about 500 Km., a scheme of analysing satellite imageries, in collaboration with Indian institute of Remote Sensing, Dehradun, with the on-site surveys have already began. For the first time, effects of maintenance dredging on marine environment are being assessed by the CPT in collaboration with Bose Institute, Calcutta, a premier scientific institution of the country. Calcutta Port Trust undertakes massive dredging every year in the region between Calcutta and Sandheads. Environmental Impact Assessment (EIA) studies at the dredging spots and dumping locations in the river consequent upon maintenance dredging are in progress. This is a 3-year Project.

With a view to providing more effective and safer guidance to ship from the Sandheads to Haldia through radar surveillance, Vessel Traffic Management Systems (VTMS) has been taken up for the segment between Sandheads and Haldia. The system will be gradually extended upto Calcutta. The first phase of the system is expected to be completed by 1995-96.

III

With increasing concern about environment, Calcutta Port Trust has sponsored a systematic programme to improve the quality of life in its immediate environment. Several technological anti-pollution measures have been taken up by CPT. Ballast water treatment plant at HDC is one of these. This plant will treat oil-contaminated ballast water from tanker-ships, which otherwise may enter into the marine environment resulting in oil-pollution. The plant has been designed as per the norms of MARPOL (73/78). The treatment scheme comprises two 6300 m^3 slop tank with skimmers, tilled plate interceptor, dissolved air-floatation unit, centrifuge etc. This plant separates oil from water and the recovered oil can be sent to nearby refinery.

CPT has already procured one of the two Oil Recovery cum Garbage Collection vessels and the same has been put into operation at HDC. Services of these vessels will be utilised whenever any oil-spill occurs apart from regular dock water cleaning operation. The vessel is fitted with oil-skimmers for separation of oil and water, oil storage tank, dispersant storage, spraying nozzles etc. for combating oil spillage. Another vessel of similar type will be put into operation at CDS very soon.

Domestic wastewater generated at HDC is being treated adequately before discharge. AT CDS, wastewater is being discharged into municipal sewage system for necessary treatment before disposal. Wastewater is not discharged to river which is a lifeline for the city as well as for the port. Thermal coal is primarily handled at berth No. 4 at HDC. To control fugitive dust emission and to improve the quality of surrounding environment, CPT has installed water sprinklers in the tippler shed. This has reduced fugitive dust emission to a great extent. Quite a good number of trucks/trailers regularly visit docks for carrying cargo to and from dock. To control the automotive exhaust emission from these vehicles, C.P.T. has introduced regular checking of PUC certificate during entry of vehicles to docks. This system is being implemented at CDS and will be introduced at HDC very soon.

Calcutta Port has been a catalyst in developing industry and trade and have been rendering continuous service to these as well as public by providing railway links to the Docks for inexpensive movement of wagons

33. Semaphor at Akra

34. Semaphor at Garden Reach

carrying cargoes, roads, bridges, flyovers and viaducts for smooth movement of the public and trucks carrying goods to/from various destinations, providing street lights/light at different ghats etc. The vast road network maintained by Calcutta Port Trust includes :

- New Taratala Road
- Old Taratala Road
- Hide Road (with Dr. B.R. Ambedkar Bridge)
- Transport Depot Road
- Hoboken Road
- Sonarpur Road
- Oil Installation Road
- Sonai Road
- Remount Road
- Raja Santosh Roy Road extension
- Coal Dock Road
- Dock East Boundry Road
- Garden Reach Road (with Swing Bridge)
- Circuar Garden Reach Road (with Bascule Bridge)

IV

CPT has taken up a massive afforestation drive since 1990 as an appendage to pollution control measures. More than 2.0 lakh trees have been planted within the port estate. The more spectacular programme concerns the Nayachar Island. As a midstream island in the Hooghly, situated opposite to Haldia Dock Complex, it plays an important role in maintaining navigational channel. Around 4 sq. Km area of the island is under the control of CPT and out of this about 2.5 sq.km has been brought under mangrove plantation. For checking soil erosion and siltation along with environmental upgradation, massive mangrove afforestation programme has been taken up. Mangrove trees reduce erosion and bind soil. More than 11 lakh seedlings have been planted till date. Nurseries have also been set up on the island. Forest Department, Government of West Bengal, has come forward to join hands with CPT to implement different phases of mangrove plantation development on this island.

Apart from mangrove afforestation CPT has also developed a Mangrove Interpretation Centre on the Nayachar island to provide information about different features of mangrove. A museum related to mangrove ecosystem has also been set up in the island. The entire area under CPT's control in the Nayachar has been earmarked as 'Environmental Park'.

CPT carries out Environmental Impact study whenever required in the form of sponsored projects. Regular monitoring of water quality within CPT has been introduced as a means to check regularly its aquatic environment. Calcutta Port Trust has set up a full-fledged unit for environmental monitoring and upgradation. Extensive studies have been carried out with the help of specialised organisations, like National Environmental Engineering and Research Institute and the Bose Institute, to assess quality of air, water etc., at Saugor Island, Haldia Dock Complex and at Calcutta Dock System and to formulate measures for environment management.

(Based partially on information with the Port)

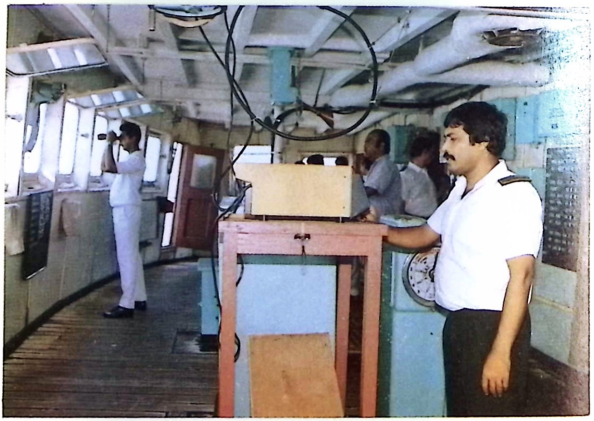
TABLE-2:TOTAL SOLIDS LIFTED BY DREDGERS DURING 1980-81 TO 1993-94

YEAR	MILLION CUBIC METERS
1980-81	10.61
1981-82	15.31
1982-83	13.51
1983-84	13.97
1984-85	14.51
1985-86	12.54
1986-87	11.98
1987-88	09.28
1988-89	10.48
1989-90	10.06
1990-91	12.22
1991-92	18.29
1992-93	14.88
1993-94	16.20

35. Land Reclamation & Afforestation

36. Mangrove Nursery at Naya chara

37. Pilot Vessel Sagar



38. Piloting

THE EVENTS THAT CPT REMEMBERS

Some memories last longer than the others. This is also true for the CPT. For example, the collapse of the idea of a port at Canning to replace Calcutta is remembered in the following manner. In 1853, the Chamber of Commerce represented to the Government about the necessity of establishing a port on the river Matla to be connected to Calcutta by railway or canal. Lord Dalhousie, the Governor General, was not fully convinced at the argument about the inhibiting depth of Calcutta Port through silting. He argued on the importance of further investigation into the facts regarding navigation. The idea of improving the navigable channel by dredging was considered. Captain Reddie, Master Attendant, indicated his confidence that dredging may result in great improvement in the channel. By 1866-67, the steam dredger *Agitator* was at work in the Hooghly and the result of this experiment was satisfactory.

Simultaneity of technology and economy is what the CPT believes as the governing condition for a port. They believe that the Port of Calcutta came into existence in the wake of few revolutionary changes like development of railway system in India, telegraphic connection with Europe and the opening of the Suez Canal. The need to serve a vast hinterland was already there. Calcutta supplied the whole of Bengal, Bihar, Assam and a portion of North Western Provinces with salt while the piece goods from England spread over a still larger area. Through this port Europe received cotton from the North Western Provinces, indigo from the same region as well as from Bengal and Bihar and Tea from Assam and Cachar. China received opium of the North Western Provinces and Bihar through Calcutta. In the intricate pattern of Great Britain's Far Eastern trade accounts, heavy annual payments due from India to Britain were remitted in the form of China tea exported from India. China trade was based upon Calcutta. Another export item from Calcutta, the trade prospect of which were being perceived in the sixties of the last century, was jute and jute manufactures.

The role of the government is considered no less important. For example, the Commissioners for the improvement of Calcutta Port came into existence through the Bengal Act of 1870. The first Commissioners, including Mr. V.H. Schalch, Chairman and Mr. W.D. Bruce, Vice Chairman, were appointed by a Government Notification dated 17th October, 1870. This eventually became the birth day of Calcutta Port Trust. There were a total of 8 members constituting the Board. The Government of Bengal vested in the Commissioners the immovable property extending along the river bank from Chandpal Ghat to Aheeritola Ghat lying on the river side of the road as also the ground lying between high and low water marks in the river from Aheeritola Ghat to Chitpur end.

Consumer preference defines the manner of functioning of a port. The contents of this belief is as follows. Calcutta Port as an artifact for shipments came into the existence with four screw-piled jetties fitted with steam driven cranes and sheds in 1870. Within one year four jetty sheds were extended to double their original sizes. Two jetties were provided with new sheds. One jetty with shed and a godown for hazardous goods were also constructed.

The jetties with tall cranes were certainly a novelty at this port. However, its significance was much more than merely changing the port's skyline. The jetties may be said to have begun the second identifiable period in the history of the Port. From now onwards, import trade was no longer subjected to clumsy handling from river side, but was ordinarily handled at the jetties, with the exception of salt which was taken by boat to the Salt Golahs at Salkia on the other side of the river, and coal, which was unloaded in Garden Reach. Having discharged their imports, vessels would go down the river to the moorings to take on their cargoes on export, like jute, gunnies, tea, shellac, linseed, hides and skins. At the jetties for the first time import cargo began to be handled with efficiency and the chances of pilferage, a serious long-standing problem, were also minimized. The Port of Calcutta was at last shedding its primitive character and was on the point of emerging as a modern transport artifact in the real sense of the term.

39. Tug Boat

40. Tug Boat in Use

The Commissioners of Port of Calcutta which commenced operation in October 1870 were debited with a capital sum of Rs. 10 lakhs payable in 10 triennial instalments upon which interest @ 4.5% was payable. During six months from October 1870 to March 1871, 52 vessels with a total tonnage of 4777 tons were accommodated and amount received as charges aggregated to Rs. 1,03,763/- . Average number of berth days occupied by a ship at Calcutta during October 1870 to March 1871 was 11.3 days for discharge only. The Commissioners were not in a position to undertake loading at that time.

The Port of Calcutta has had good days and bad days. To take these by stride is a sign of sagacity. Short run miseries need not upset unduly. This has sustained the CPT over the last 125 years as Table -1 would reveal.

II

Responding to tasks not directly related to cargo handling has been an element of attitudinal disposition of the CPT from its early days. Such responses were partly opportunistic and partly gracious. The reality was somewhat as follows. The port facilities and the city of Calcutta was on the left bank of the river. But the railway terminal connecting the deep north-western hinterland was on the right bank. The river helped many industries to locate along the stream with attenuated urbanisation to the north and south of Calcutta on both banks. And there was no facility to cross the river. The CPT responded to this need in their very early years. Proposal for constructing a floating bridge across the river Hooghly to connect Calcutta and Howrah was discussed in the meeting of the Commissioners held on 27th March, 1871. First crossing facility over the Hooghly River between the twin cities of Calcutta and Howrah was established through a Pontoon Bridge in 1873.

The Commissioners considered the question of having convenient means of transport for public use between the opposite banks of river within port limits. Commissioning of ferry services by the Commissioners of Port of Calcutta was facilitated when a bill was introduced and passed as Bengal Act-IV of 1905. Tenders were invited for the construction of 7 vessels with capacity of 200 passengers each. Order was placed with M/s Thornycroft & Co. for construction and delivery of the total 7 boats which were to be twins-screw vessels with a speed of 12 knots. The boats were erected in Calcutta.

The ferry service was commissioned on 1st october, 1907. At the first instance, it comprised three services : (a) from Salkia to Burabazar, (b) Aheeritola and Bagbazar and (c) from Chandpal Ghat through Ramkistopur to Shibpur. From the financial point of view the service was not viable initially, since the running expenditure exceeded the earnings and no provision was left to meet charges on vessels and *ghats*. However, number of passengers increased significantly both for the 1st class and as well as the 2nd class passengers. Between October 1907 and April 1908, over 20,000 passengers were carried in the 1st class and over more than 2 million passengers in the 2nd class.

In 1910, four more steamers were obtained and 5 more stations viz. Bally, Shibutala, Kuttighat, Cossipore and Uttarpara were opened. In 1912, two more vessels were procured and 3 more stations namely Metiabruz, Rajabagan and Rajgunj were opened. In 1913, a station was opened at Taktaghat and the station at Botanical Garden was made permanent. With the opening of the new stations and procurement of additional vessels, the financial result of the ferry services improved distinctly from 1910-11 onwards.

The ferry services were seriously affected with the out-break of World War-I since it was necessary to place a number of boats at different times at the disposal of Government. It may be noted that two shallow draft vessels had been requisitioned for services in Mesopotemia in September 1916. It was not possible to maintain the ferry services at a satisfactory level. In August 1920, the Commissioner placed an order of two paddle steamers of greater capacity than the twin-screw vessel. The growth of ferry services rose from 2.3 million passengers in 1907-08 to 11.4 million in 1919-20.

What happened to the CPT ferry service afterwards is not remembered. Today, private operators using the old jetties of the CPT run such services.

III

Memories are recalled sometimes with a sense of fear. It was February, 1884. A ship named *Aurora* laden with Kerosene Oil was discharging at Garden Reach when a fire broke out on board. The fire engine vessel was unable to get alongside owing to the excessive heat generated and the danger of falling spars. About midnight the vessel grounded and when the flood tide

41. Old Jetties of Calcutta

42. New Jetty

came, water entered the wreck and floated out the burning oil on the river.

The fear stimulated by this experience delayed decisions on selecting a proper site for handling petroleum trade. The options were between Port Canning with railway connection or Budge Budge. Budge Budge was finally chosen as giving the most convenient location since wharf was constructed there by July, 1886.

Nevertheless, the depot at Budge Budge also had a serious accident. A fire which commenced in the evening of 31st march 1903 continued to burn for several days. This caused complete destruction of the shed in which the fire originated. Total damage was estimated to be around Rs. 15 lakhs. However, measures were taken to prevent spreading of fire and to keep losses and damages to a minimum. The lay-out of the depot has been changed and no other major fire broke out since then.

IV

Something or the other happens everyday in a port, but very few are remembered. When asked to recall the really memorable events, responses were varied. Nevertheless, a consensus emerged therefrom. The events that are remembered with some emotions can be listed as follows :

1870 : Appointment of the Commissioners for the Improvement of the Port of Calcutta.

1871 : Appointment of Port Commissioners as the Conservators of the Port.

1873 : First crossing facility over the Hooghly River between cities of Calcutta and Howrah was established through a Pontoon Bridge.

1874 : First Dredger *Octopus* commissioned.

: First 30 Ton Floating Crane acquired.

: First bridge linking Calcutta and Howrah opened.

1875 : Introduced night work at jetties to meet demands.

1876 : First railway line connecting jetties opened This extended to Baghbazar to Mir Bahur Ghat and was originally known as the tramway .Only in 1880 the management of this tramway was integrated with the trunk railway routes of the Indian Railways.

1881 : Port Commissioners appointed as the Conservators of the Hooghly river.

: Acquired the first suction dredger *Sandpiper.*

1883 : First despatch vessel was acquired to carry on navigational buoy work.

1884 : Garden Reach Jetty burnt by fire while unloading Kerosene from *Aurora.*

1886 : First petroleum wharf at Budge Budge opened.

1887 : First Tea Warehouse opened.

: First Dry Dock constructed.

1892 : Kidderpore Dock opened.

: Berge *Luisie* first vessel to enter KPD.

: 100-ton sheer legs installed.

1903 : Great fire at Budge Budge Oil Jetty led to total destruction of the sheds.

1906 : Commissioners acquired their first motor car.

1907 : River Dredging was first taken up with the *Sandpiper.*

1920 Garden Reach Jetty re-constructed.

1924 : Participated in British Empire Trade Exhibition in London and was awarded a medal.

1928 : King George's Dock opened.

1943 : Howrah Bridge (Rabindra Setu) opened.

: Khidderpore Dock bombed by Japanese leading to death of 42 personnel.

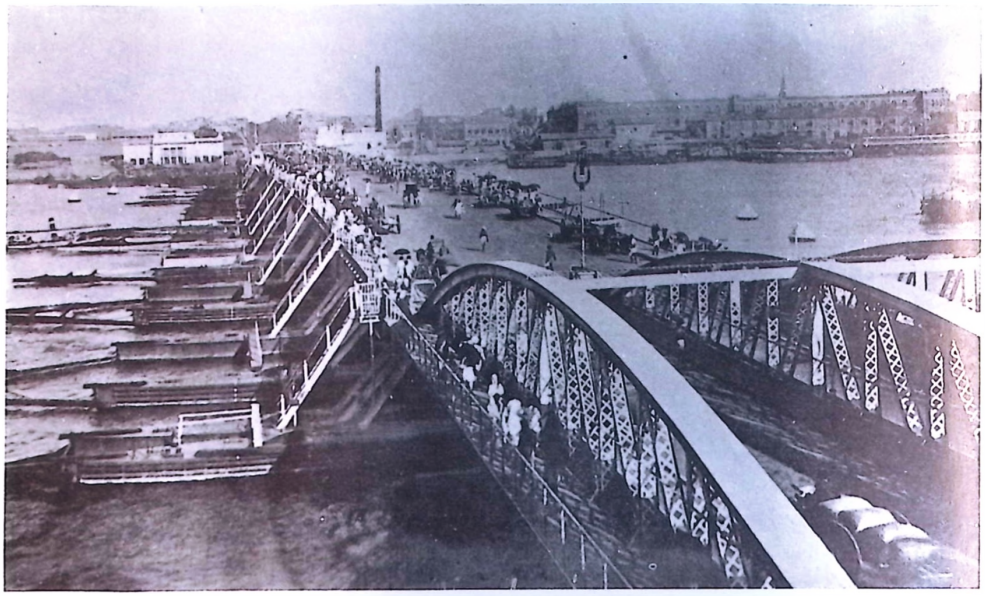
1944 : Operations at King George's Dock handed over to the American Army.

1947 : First Indian Chairman of CPT, Shri N.M. Aiyar, appointed.

: 25 foreign ships anchored at port raised the Indian Union flag on August 15.

1948 : Cargo-handling shore labour decasualised.

1953 : Stevedors' labour decasualised.



43. Pontoon Bridge across the River

44. The Great Fire at Budge Budge : 1903

1956 : Mechanical coal loading plant at 18 berth at Kidderpore Dock installed.

: 200 tonnes crane at No. 1 King George's Dock installed.

1956 : Construction of 3000 units of Class IV quarters at Taratola completed.

1957 : Carrying cargo as head load ceased, except for coal.

1959 : Haldia Anchorage operation started.

1962 : Hydraulic Study Department set up for systematic study of the River Hooghly.

1903 : Major Port Trust Act passed.

1965 : First estuarine dredger *Mohana* acquired and estuarine dredging initiated.

: Institute of Port Management inaugurated.

1966 : Bascule Bridge between Kidderpore Dock I and Dock II opened.

: Carrying of coal as head-load ceased.

1968 : Haldia Dock Construction work started.

: Haldia oil jetty commissioned

1969 : Foundation stone of Haldia Oil Refinery laid.

: Construction of new 200 bed Hospital completed.

1970 : Centenary Year of the Calcutta Port Commissioners celebrated.

: Arrangement of Haldia Fertiliser Plant finalised.

1971 : Introduction of Central Industrial Security Force (CISF).

: First English medium school opened at Haldia Port Town.

1974 : First Lash vessel *Robert E. Lee* called at Haldia.

: First World Bank Tanker *M.T. Vivekananda* having 87,500 DWT called at Haldia Oil Jetty.

1975 : Farrakka Barrage commissioned.

: Calcutta Port Trust came into existence inplace of Calcutta Port Commissioners

1976 : Lock entrance at Haldia was flooded.

1977 : Haldia Dock opened for merchant vessel.

: *M.V. Visha Vijoy* loaded coal at Haldia Dock.

: Pact with Bangladesh regarding distribution of Ganges water signed.

: First iron ore ship called at Haldia Dock Complex.

: First General Cargo (G.C.) Berth opened at Haldia Dock Complex.

: First consignment to China after Chinese aggression in 1962 was shipped by *M.V. Golden Land.*

: First vessel to bring cargo after the Chines aggression in 1962 from People's Republic of China *was M.V. Hong Shan.*

1978 : Calcutta Jetty totally closed down.

: First vessel to enter Haldia Dock Complex with containers on board *M.V. Vannoise.*

: First container cum Ro Ro Ship *M.V. Ganguin* called at Haldia Dock Complex.

1979 : Leave Travel Concession (LTC) adopted.

: Closing of project establishment at Haldia.

: Portrainer and Transtrainer cranes put into commission at Haldia Dock Complex

: New incentive scheme of piece-rate labour was implemented.

1980 : First container ship *M.V. Export Bay* called at Netaji Subhas Dock (NSD).

1982 : Amendment of Major Port Trust Act .

: Movement of containers by barges between Calcutta and Haldia started.

: The American Embassy in India selected Calcutta Port as the delivery point for its requirements at Delhi and Consulates in other major cities of India in replacement of Bombay.

1983 : Northern and Shalimar Section of CPT Railway closed down.

: Haldia was included in the HaldiaNotified Area Authority.

1984 : Free Export Promotion Zone (FEPZ) came up on Port's land.

: CPT handled over land to Eastern Railway for running Circular Rail.

45. *Head Office of the Commissioners*

46. *Old Fleet of the Commissioners*

1985 : Container Park opened at Dhobitala with a total area of 64,000 sq.m.

: Railway linkage opened between CPT and Amingaon, Guahati.

1987 : Rangafalla channel opened.

: Mechanical Coal loading plants at 18 CB and 20 CB closed down.

1988 : Computer Centre at CDS started functioning.

: First stevedoring by CPT.

: First stevedoring by Calcutta Dock Labour Board (CDLB).

1989 : Introduction of main line container vessels at Haldia Dock Complex

: Container transhipment for Bangladesh ports started at Haldia Dock Complex.

: Master Plan of Calcutta Port submitted by JICA

1991 : Commissioning of Second Oil Jetty, Berth No. 2 at Haldia Dock Complex.

1992 : Commissioning of Container Terminal, 7 NSD, at Calcutta Dock System.

1992 :Introduction of Voluntary Retirement Scheme.

: Signing of MOU with TISCO for exclusive use of Berth No. 8 at HDC for handling coking coal/steel.

: Signing of MOU with M/s SAIL for utilisation of Berth No. 5 for handling coking coal.

1993 : Opening of Maritime Museum on Board the vessel *D.B. River Ganga.*

1994 : Signing of MOU with M/s Chokhani Shipyard (Bengal) Limited.

: Completion of construction of Berth No. 10 at HDC.

1995 : Successful handling of first Suez-Max Tanker *Gandhar* at Berth No. 2 of HDC.

: Completion of Dr. Ambedkar Bridge after renovation of old Viaduct Bridge.

V

The CPT felt at times that the ambience was ethically unjust and deserved intervention. But sanctions for such interventions are needed from the Government. An opportunity emerge for the CPT to act. Around 1988 the Ministry of Surface Transport desired that the Major Port Trusts and Dock Labour Boards undertake stevedoring operations in ports where private stevedores were in the field. The first stevedoring operation at Calcutta Dock System was performed successfully by Calcutta Dock Labour Board (CDLB) in February '88 on a vessel of Shipping Corporation of India (SCI), Calcutta Port Trust (CPT) also started stevedoring work soon after. From its inception till March 1994, 304 stevedoring jobs have been executed successfully by CPT/CDLB combine. The primary purpose of CPT/ CDLB in entering the field of stevedoring was to break the cartel formed by certain stevedores who were increasing stevedoring rates along with unfair practices. To bring down the cargo handling cost, one needed competitive intervention.

CPT/CDLB have been able to capture substantial amount of stevedoring business. Though number of stevedoring jobs performed by CPT/CDLB is declining, the productivity levels are improving. Stevedoring performance of CPT for the years 1988-89 to 1993-94 is given in Table -2 placed at the end.

VI

Another creation of the CPT is a cherished possession. The Maritime Museum and Training Centre of the Calcutta Port Trust on board the vessel D.B. River Ganga was inaugurated on 31st July, 1993. The floating Maritime Museum and Training Centre developed on a working paddle ship is unique in many ways. For the people of Calcutta, once known as the 'City of Museums', this provides an opportunity to have a glimpse on the maritime activities. This museum blends history with port shipping technology.

VII

The Port of Calcutta in the recent years has registered improvement in various aspects despite fall in the average draft in the river which is a governing factor as shown in Table 3A and 3B. The Tables 4 & 5 placed at the end, reveal the following :

47. *Oil Jetty at Budge Budge*

48. *Second Oil Jetty at Haldia*

- Total number of vessels handled at Calcutta Port during 1993-94 was 1415 which is next to Bombay Port
- Average DWT of vesssels visiting Haldia Dock Complex was highest amongst Indian ports during 1993-94
- Haldia Dock Complex retistered 2nd highest average output per berth day amongst all major ports of India, both in 1992-93 and in 1993-94
- HDC registered about 20% improvement in average detention of vessels prior to berth in 1993-94 in comparison to the previous year. Similarly average turn-round time of vessels improved both at CDS and HDC during 1993-94. The improving trend continued in 1994-95 and with determination and appropriate measures being adopted further all round improvement appears to be more than likely.
- The trend of improvement continued in 1994-95. Illustrative achievement made by CPT during 1994-95 is mentioned below :

(i) MT "Gandhar" E - Suez-Max vessel (1.40 lakh DWT) visited Haldia Dock Complex (HDC) on 6th March, 1995, creating a record in respect of the largest and longest vessel to visit Calcutta Port recording the highest proucti vity as well.

(ii) Calcutta Port haldled 5.26 lakh tonnes of sugar (29% share of the national traffic) : the maximum handling by any Indian Major Port.

(iii) Improved availability of Pilots has made detention of ships a thing of the past.

(iv) Materialisation of new traffic : Rice export to Bangladesh from HDC and import of SKO on account of private party at Baj Baj Jetties of Calcutta Dock System (CDS).

(v) Calcutta Port holds second rank in terms of number of vessel-calls at Indian Major Ports; The total number of vessels called during 1994-95 was 1563 registering an incease of 111 vessels over the previous year which means an increase of the order of 8%.

(vi) Average pre-berthing detention of vessels at CDS in less than one day, one of the lowest among Indian Major Ports.

(vii) At Container Terminal at CDS, 194 TEUs were discharged in the night shift of 21.3.95 recording highest output in a shift.

(viii) One Main Line Container Operator commenced operations during 1994-95 at CDS."

(Based partially on information with the port)

TABLE - 1 : ANNUAL CARGO THROUGHPUT AT CALCUTTA PORT

Average Over 10 Years Period in thousad metric tonnes (Unit in Thousand and Tonnes)

DECADE	IMPORT	EXPORT	TOTAL
1870-1871 & 1879-1880	1566	1996	3562
1880-1881 & 1889-1890	1751	2254	4005
1890-1891 & 1899-1900	1942	2533	4475
1900-1901 & 1909-1910	2566	4477	7043
1910-1911 & 1919-1920	2855	5066	7921
1920-1921 & 1929-1930	3320	5718	9038
1930-1931 & 1939-1940	2550	6083	8633
1940-1941 & 1949-1950	3096	4516	7612
1950-1951 & 1959-1960	4026	4958	8984
1960-1961 & 1969-1970	5586	5089	10675
1970-1971 & 1979-1980	4751	2984	7735
1980-1981 & 1989-1990	8004	3726	11730

49. Lock Entrance at Haldia

50. Lock Operation at Haldia

TABLE - 2 : STEVEDORING PERFORMANCE OF CALCUTTA PORT TRUST : 1988-89 TO 1993-94.

YEAR	NO. OF STEVEDORING JOBS	TONNAGE	AV. OUTPUT PER HOOK-SHIFT (TONNES)	MAXIMUM OUTPUT IN A SINGLE-HOOK (TONNES)
1988-89	36	159029	108.4	570
1989-90	36	132242	73.67	352
1990-91	32	87169	64.21	146
1991-92	21	61696	60.78	368
1992-93	21	54015	79.24	492
1993-94	17	33000	90.46	638

TABLE -3A : AVERAGE DRAFT AT CALCUTTA DOCK SYSTEM (in meters)

YEAR	DRAFT			NUMBER OF DAYS
	Maximum	Minimum	Mean	below 7.9 metres
1938-39	9.15	6.86	8.16	92
1943-44	8.84	5.49	7.52	285
1948-49	9.45	5.72	7.51	259
1953-54	9.30	6.17	7.47	262
1958-59	8.23	5.49	6.94	354
1963-64	8.46	5.41	7.11	312
1968-69	8.99	5.72	7.47	243
1973-74	8.70	5.50	7.08	301
1978-79	8.40	5.60	7.04	322
1983-84	8.30	5.10	6.83	349
1988-89	8.70	5.20	7.22	278
1989-90	8.70	5.60	7.22	316
1990-91	8.30	5.60	7.14	320
1992-93	8.30	5.70	7.30	343
1994-95	8.80	6.00	7.57	278

TABLE -3B : AVERAGE DRAFT AT HALDIA DOCK SYSTEM (in metres)

YEAR	DRAFT			NUMBER OF DAYS
	Maximum	Minimum	Mean	below 10 meters
1978-79	10.0	7.6	8.97	345
1983-84	9.5	7.2	8.52	365
1988-89	9.6	6.3	8.09	365
1989-90	8.70	5.60	7.22	316
1990-91	9.0	6.7	8.26	365
1992-93	9.50	7.6	8.69	365
1994-95	9.1	7.1	8.27	365

TABLE -4 : SIZE OF CALLING VESSELS AT THE INDIAN MAJOR PORTS

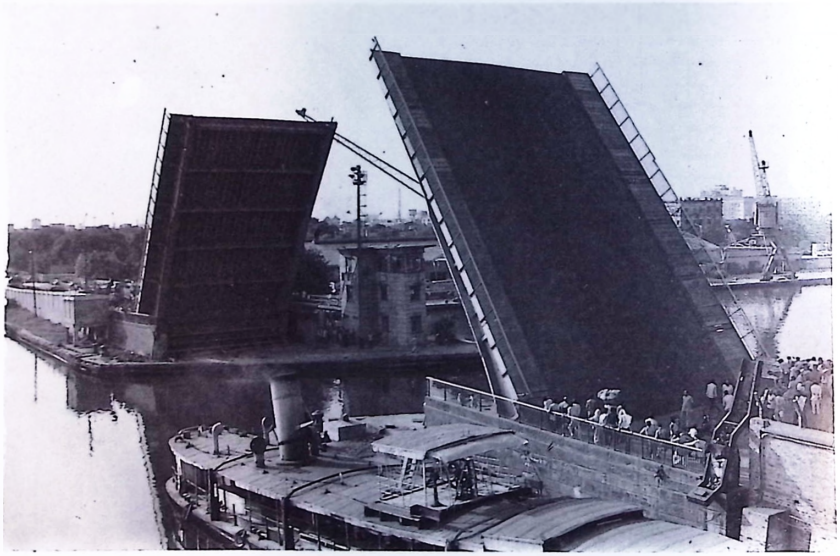
No. of Vellsels and Their DWT : Category-wise : 1993-94

PORT	DWT	DRY BULK		LIQUID BULK		BREAK BULK		CONTAINER		TOTAL	
		No. of Vsls	DWT	No. of Vsls	DWT	No. of Vsls	DWT	No. of Vsls	DWT	No. of Vsls	DWT
ALL PORTS	Below -10	331	1623	593	3800	1176	5094	1136	7266	3236	17784
	< 20	331	5031	525	8541	818	12482	534	7540	2208	22593
	< 30	217	5600	1082	29120	225	5349	100	2274	1624	42343
	< 40	723	26738	535	18268	17	588	3	97	1278	45691
	< 50	427	18862	333	14771	11	489	21	884	792	35006
	Above - 50	350	32596	742	68653	3	293	6	595	1072	100287
	Total	2379	90450	3810	143153	2250	24295	1800	18656	10239	276554
BOMBAY	Below - 10	53	315	218	1206	301	1344	261	1908	833	4773
	< 20	52	766	76	1110	211	3248	275	4124	614	9248
	< 30	22	569	169	4508	87	2079	92	2090	370	9246
	< 40	–	–	82	2767	3	104	2	66	87	2937
	< 50	–	–	81	3516	5	228	19	794	105	4538
	Above - 50	–	–	162	13211	1	89	5	527	168	13827
	Total	127	1650	788	26318	608	7092	654	9509	2177	44569
CALCUTTA	Below - 10	5	39	87	586	130	586	163	1119	385	2330
	< 20	13	190	37	638	132	1936	44	526	226	3289
	< 30	2	41	69	1864	8	173	–	–	79	2078
	< 40	–	–	7	228	–	–	–	–	7	228
	< 50	–	–	–	–	–	–	–	–	–	–
	Above - 50	–	–	–	–	1	91	–	–	1	91
	Total	20	270	200	3316	271	2786	207	1645	698	8016
HALDIA	Below - 10	3	24	51	369	8	44	24	146	86	583
	< 20	11	183	29	498	16	238	30	403	86	1322
	< 30	11	286	95	2608	7	156	1	21	114	3071
	< 40	131	5053	51	1812	–	–	–	–	182	6865
	< 50	58	2575	54	2469	–	–	–	–	112	5044
	Above - 50	23	1477	114	8424	–	–	–	–	137	9901
	Total	237	9598	394	16180	31	438	55	570	717	26786
MADRAS	Below - 10	18	149	48	343	168	709	172	1151	406	2352
	< 20	46	175	38	662	118	1882	76	1015	278	4374
	< 30	24	621	113	3081	25	25	4	94	166	4388
	< 40	147	5366	71	2458	3	99	1	31	222	7954
	< 50	72	3117	60	2687	1	46	2	90	135	5940
	Above - 50	48	5069	132	10301	–	–	–	–	180	15370
	Total	355	15037	462	19532	315	3328	255	2381	1387	40278

TABLE - 5 PORT PERFORMANCE : AVERAGE INDICATORS OF 1992-93 & 1993-94

Name of Port	Year	Turn Round Time (Days)	Pre-Berthing Time (Days)	Output Per Berth Day Tonnes
Calcutta	1993-94	9.31	1.02	928
	1992-93	10.05	0.94	786
Haldia	1993-94	5.71	1.61	6335
	1992-93	6.67	2.00	5336
Paradip	1993-94	5.65	1.35	5461
	1992-93	5.95	1.49	5193
Visakhapatnam	1993-94	6.04	1.26	5699
	1992-93	7.32	1.81	5246
Madras	1993-94	7.21	1.92	4244
	1992-93	7.08	2.10	4293
Tuticorin	1993-94	5.81	1.99	2194
	1992-93	5.55	1.59	2148
Cochin	1993-94	4.50	0.98	4031
	1992-93	5.50	1.01	3848
New Mangalore	1993-94	5.40	1.91	5503
	1992-93	6.37	1.36	3299
Mormugao	1993-94	6.15	0.76	8341
	1992-93	7.22	1.08	8214
Bombay	1993-94	8.75	2.41	2647
	1992-93	8.63	2.34	2611
Nava Sheva	1993-94	4.25	0.83	2800
	1992-93	7.72	2.34	2611
Kandla	1993-94	7.37	3.05	5486
	1992-93	8.57	3.53	5214

51. Kidderpur Dock



52. Bascule Bridge at Kidderpur Dock

MEMORIES OF A TRAFFIC MAN

Ronobir Roy

Traffic Probationers used to be recruited every 5 years to meet the needs of shipping and trade. One had to hold a minimum of a Cambridge School Leaving Certificate which I had. In addition I also held a certificate of Mining Engineering from the Indian School of Mines in Dhanbad - equivalent to a bachelors degree in Civil, Mechanical and Electrical Engineering. I was recruited as a Traffic Probationer on July 2, 1939 by Deputy Chairman, Mr. R. Coleman and Traffic Manager Mr. Kumar Mitter. Both were bent upon putting the Port on the Games Map of the time.

Many of my batch mates were sportsmen. Amongst them, S.M. Maroof (Tennis) went on to build or extend Ports in Chittagong, Karachi and several middle-eastern countries. P.A. Jansen (in Dhyan Chand's opinion) was the finest Hockey Left Inside the game has ever produced. G.W. Peake (Tennis), Balbir Kapur (Hockey Centre Half), G.M. Sargeant (Hockey Left Wing), Sanjib Das (Hockey Right Half), N.L. Davis (Hockey reserve), Neil Cowen (Hockey Right Half) and Nandi Singh (Hockey Right Inside) were the others.

Soccer goalkeeping was my first preference in school and college. I was at least renowned for it in the Hills District of Darjeeling. I had played for St. Paul's School. Hockey goal keeping was my next preference, but in those days Dick Allen, India's Olympic Hockey captain & goalkeeper, was the goal-keeper also of the Port Team. After his retirement, his mantle fell on me. I kept goal in 3 Beighton Cups that the Port won.

World War 2 started on Sept 3, 1939. Accelerated training started immediately for replacing the called up officers. With each vacancy that was created, Mitter and Coleman went on increasing the number of players. Thus in the ensuing 3 or 4 years they recruited Keshav Dutt (Hockey Centre Half), Leslie Claudius (Hockey Right Half), Joe Garibaldi (Hockey Left Half), Cyril Hodges (Hockey Full back), Jerry Glacken (Hockey Center Forward), Honey Mead (Hockey Full Back) and Steve Roach (Hockey Right Wing). When the War finally ended and the 1948 Olympic Games were held in London, 9 out of the 14 hockey players of the Indian team came out of the Calcutta Port Team. It was a unique distinction, which has never been equalled. Keshav Dutt and Claudius went on to help India defend her Hockey title in the 1952 and 1956 Olympics.

No major game has undergone changes of rules as in the field of hockey. All these rules have favoured the hard hitting methods of play of Western Countries. If the Rules that prevailed upto the 1948 Olympic Games were reintroduced, together with lining-up at the point of offence and bullying, instead of hitting the ball, the amazing short passing and dribbling game will return and so will the supremacy of teams from the Indian sub-continent.

In the early 60s, Zambia needed help. Consequent upon the closure of her southern borders and access to her traditional ports on the east coast located in South Africa and Mozambique, ships and cargo needed to be diverted to different ports on both coasts of Africa. The ports available on the east coast were Dar-es-salaam and Mombasa, linked to Zambia by a Chinese built highway, where once a Norwegian Consultant and I were held up for over two hours whilst ten-dep herds of thousands upon thousands of wildbeast, zebras, lions and elephants crossed from one side of the road to the other.

In the previous couple of years I was privileged to study modern port facilities like container berths in the ports of the USA, Canada, Britain, and Holland, coal and ore loading methods in American, Canadian and Dutch ports and the different alternatives for railways serving these terminals, specially the use of gravity wherever possible. Even in the most mechanised ports, not only for helping fast turn around of wagons at these terminals but also for rapid filling of the ship-loaders, use of gravity had its merit. Many of the methods that I had reported upon were adopted at the Haldia berths.

Calcutta's deep water port facilities at Haldia were due to be opened to shipping in mid- 1965 and I was

earmarked to be the first General Manager of Haldia. But it was not to be. President Kenneth Kaunda of Zambia was invited to come to India in mid-1965 to receive the Nehru Award for non-violent solution of affairs in Zambia. All Ministries in Delhi sent out circulars wanting to know immediately, if any matter concerning Zambia was outstanding. In the Ministry of Transport my posting to Zambia was outstanding. In early July 1965, under urgent instructions of the Ministry of Transport Delhi, who arranged for my visas and my Air Ticket arranged by UNDP Delhi, I arrived at Lusaka with a 2-year UN Contract.

A UNDP car met me at the Airport and I was given a note to report to the Res.Rep. at the UNDP office at 9 am. Next morning I reported to Resident Reprsentative Mr. Pratley as instructed. Then came the bomb shell. He wanted to know why I had come to Lusaka ! I was stunned. He told me to get back to my hotel and stay there till I heard from him again. I seized the opportunity to tell him that presumably something had gone wrong, but I was quite prepared to return home immediately where an important job was waiting for me. I also telephoned Calcutta and told Chairman Mr.B.B. Ghosh of this development.

The Chairman, with concerned Transport Ministry Officers, saw the Delhi UNDP people immediately, but were told that UN protocol did not permit this easy way out. It was their responsibility to find a job for me as long as it was in my area of competence. Finally after weeks of waiting, I became the personal Adviser to the Resident Representative in Lusaka for all matters connected with Zambian ships and cargo consequent upon the closure of the country's southern border.

I went with the Resident Representative to all meetings called by the Government concerning ships due to arrive with Zambian cargo. It was very interesting work, but entailed a great deal of travelling. All this time UNDP Lusaka were asking UNDP organisations not only in other African countries, but also in New York and Geneva if they could fit me in somewhere.

In 1965, I was closely connected with the IIPM, the NIPM and a Norwegian firm called Seagull in developing Port Equipment Simulators i.e., simulators for Portainers, Transtainers and other Container handling equipment. In the 1965 IIPM Seminar on the training of port workers and equipment operators, where I was privileged to present the theme paper, Mr. Zaoze Dong, the Chinese Government Representative, showed interest only in these Hi-Tec Simulators and requested that the next Seminar be held in China in the course of the following twelve months. This was agreed to and the Seminar was held in Beijing jointly funded by the UN, Seagull, and the Governments of China and Norway.

These Seminars gave me some very good friends in the shipping departments of the UNDP and the ILO in Geneva. ILO finally requested the UN for my posting in Geneva as a Technical Adviser on matters concerning developing countries and their training of port workers, equipment operators and other port officials. I was eventually posted back to Africa as the ILO's Regional Maritime Adviser with HQ at Dar-es-Salaam dealing with cargoes of all land locked countries for 3 years, and with HQ at Blantyre (Malawi) as the Ports & Shipping Training Expert in a UNDP Project covering land-locked countries in the southern African region. I served for 3 years before re-called to Geneva. In Geneva at the ILO's Maritime Services HQ, I was given an opportunity to study training methods in Rotterdam's Maritime Training institution before being transferred to Bangkok, the UN's Eastern HQ, as the ILO's Regional Maritime Advisor at their Regional Office for Asia and the Pacific (ROAP).

Bangkok had the unenviable reputation of having the world's most disorganised traffic; but traffic moved because of their amazing tolerance in letting other traffic pass them. In the UN and the World Bank records the Thais had the very enviable reputation of completing all their projects well ahead of scheduled dates. This in my view was because the Thais had no labour Unions as such. The interests of the workers were looked after by a Labour Department officer, holding the rank of Minister, who was answerable directly to a very greatly loved and highly respected King.

As an Indian what intrigued me greatly was the fact that though India was the birthplace of both Budhism and Hinduism, it is Thailand and private enterprise that is reaping all the commercial benefits. The Thais have never been a subject nation but have always permitted all countries to withdraw in the currency of their choice all that they earn in Thailand. That together with dedicated high quality workmanship is the reason why manufacturers all over the world locate in Thailand their plants for all makes of cars, trucks and the labour intensive spares that go with. The world's most famous names in clothing and leather goods line the streets of Bangkok and not Delhi or Calcutta or even Dhaka.

I started coming to Australia in 1985 en-route to Fiji and other Pacific Island countries like Vanuatu and Western Samoa to find that there were more port officers of my generation in Sydney than there were in Calcutta or India for that matter. In ports all over the world with containerisation replacing break bulk shipping the problem has been the imaginative utilisation of the space released in order to increase port revenue. In this field Sydney probably leads the world with its amazing Darling Harbour Development on areas released by break-bulk shipping.

In the course of my 16 years with the UN, Project work took me to most countries in the world and I never missed a single day at work. Amongst the most interesting people I was privileged to meet personally, were president Julius Neyrere of Tanzania, Martial Tito of Yogoslavia, Mrs. Margaret Thatcher of the UK, Mrs. Bandarnyaka of Sri Lanka and Mr. Sanjay Gandhi of India.

After retiring from UN services in 1986 I have settled in my own home in one of the fastest growing western suburbs of Sidney, only about an hour by rail or road from its famed Harbour Bridge. Our house is only a hundred metres from the Marayong railway station and our guest rooms await all friends from the Calcutta Port. Come and see the amazingly different flora & fauna of this vast island nation.

53. Suezmax Oil Tanker "Gandhar" at Jetty

54. General Cargo Vessel at Berth

MEMORIES OF A MEDICAL MAN

S.K. Das

I remember the day in 1948 when I was interviewed by the then CMO, Col. Anderson. Unlike other members of the Selection Committee, he did not ask me any technical question. However, while going through my bio-data he noticed that I had destinction in Medical Jurisprudence. So he declared me as a legal practitioner and not a doctor. I was really surprised when I got my appointment letter few weeks later as a medical person.

The Medical Department is not so old as the Port. Originally it consisted of two dispensaries and a few observation beds in Dock Hospital. Accident cases as well as cases requiring hospitalisation were sent to public hospitals in the city for treatment. During World War II when Calcutta Dock was bombed by the Japanese, it was felt that some medical facility should be available for treating air-raid cases. In a hurry the *Dharamshalla* at Babughat was converted into Port Emergency Hospital. For sometime all arrangements were kept ready, but no patient came. Fortunately the war was soon over and this hospital started admitting the Port employees for medical treatment and surgery. It was however seen as a purely temporary arrangement and search for creating a hospital some where near the port area continued. At that time a number of houses were under construction and one of these blocks was modified to provide a hospital of 100 beds at Remount Road.

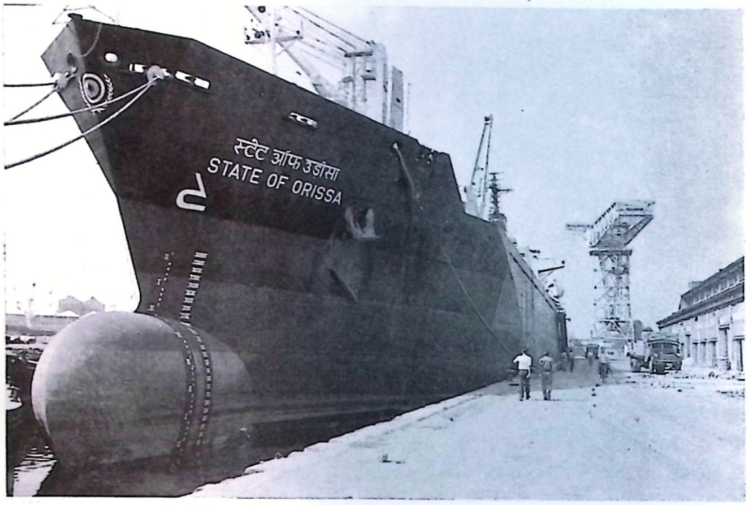
The shifting of Port Emergency Unit to Remount Road took place in 1949. This Hospital served the needs of Port employees for the next twenty years. During this period it became very popular with the employees and its efficiency was appreciated by the medical community of the city. Various Indian and foreign dignitaries visited the hospital and praised its cleanliness. Actually they were often brought to the Hospital to serve a cup of tea at probably "the cleanest place" in the Port.

In addition to hospital facility, the Port authority introduced a unique service, called the External Service, possibly for the first time in India. The medical officers were posted round the clock, provided with car and driver along with emergency medicines to attend the employees or their dependents at home within Calcutta Corporation area whenever called to do so.

Inspite of efficient functioning of Remount Road Hospital a search was made to build an ideal hospital and ultimately the present site next to the Calcutta Mint was selected. The planning of this hospital was done keeping in view the convenience and comfort of patients. The Medical Department was associated with the architect throughout the stage of planning, going into minute details. The last hardle was faced when an architect from Delhi vehemently criticised the plan pointing out the wastage of space for verandah on either side and spacing of beds wide apart. It was pointed out by the Medical Department that the verandas were meant to be utilised by ambulatory patients for recreation. Spacing of bed at 8 feet from centre to centre was according to international standard. It was ultimately left to Mr. B.B. Ghosh the then Chairman to convinence him.

At least the construction was over and we shifted to the new Hospital at Port Hospital Park on 5th August 1969. The transfer was completed on a single day employing a convoy of trucks for goods & materials and ambulances for patients. In spite of such busy schedule we had to manage a surgical emergency that very day in the new hospital.

We are very proud of our operation theatre in the Hospital. It was according to recommendations of a special committee formed by the Royal College of Surgeon of England and even today it is possibly the best operation theatre in Calcutta. Since then the Hospital has grown rapidly with various modern diagnostic equipment for radiology, pathology & eye department. Recently "an Intensive Care Unit" has been added. Various specialists on different disciplines have been recruited to help and guide the Medical Officers.



55. Container Vessel at Berth

56. Ship & Barges in Dock Pond

This Hospital has been recognised by Calcutta University for training of surgical & medical house surgeons and house physicians.

Another wing of the Medical Department is Health Department, which was transferred from Secretary's Department sometime in 1947. This is responsible for maintaining cleanliness of roads, drains, latrines etc, not only within the Port area but also in the wide residential areas of Calcutta Port. In supervising their work I noticed co-ordination between health department and the Civil Engineering Department could help improve sanitation and would avoid unfortunate situations.

With great reduction of employees in Calcutta Port it is high time to consider opening up such a nice facility for wider utilisation by outsiders including the retired employees.

57. Port Ambulance Service

58. Surgery at CPT Hospital

MEMORIES ON PILOTAGE

R.E. Mistry

Calcutta port is celebrating its 125th anniversary in 1995. The pilots of the river Hughli celebrated their tercentenary (300 years in 1969). The Bengal Pilot Service of the river Hughli was organised on 14th July 1669 under the control of the East India Company. After the partition of Bengal into the East and West wings in 1947, the Bengal Pilot Service was renamed the Hooghly Pilot Service. In 1964 it was again changed to Calcutta Pilot Service after the amalgamation of the river and port sections of the operational services. I had the privilege of serving in all the three services.

From 200 tons deadweight tonnage (DWT) sailing vessels of the 17th century, the pilot service is handling and navigating today vessels of 25,000 DWT to Budge Budge and Calcutta and over 100,000 DWT to Haldia port (half way down the river Hughli) through narrow and shallow tidal waters of the river Hughli. Ships coming into Calcutta have changed from the slow, sluggish coal-burners to the fast container-ships with bow-thrusters. Piloting has remained the same. I remember doing 24 hours of non-stop piloting to take a five-knot ship down the river. Today we take 10 hours or less. Though larger ships are coming up the river, deep drafts are not available due to silting of the river. Nor is night navigation done in the upper reaches.

Two navigational feats, unique in the world, performed in the port section of the river are now elements of history. When the berths in the Khiderpur and Netaji Subhas Docks were all occupied, ships had to tie up with chains in the river above Garden Reach. While leaving the moorings on the ebb tide, the ships used to back-down from Howrah Bridge to Garden Reach, a distance of five miles, through a narrow bar at Outram and round a sharp bend at Khiderpur Dock entrance. This was done all without the aid of a tug — simply by skillful use of the ship's engines, the tidal flow and the anchor. The other ship handling feat was a 'tier job'. It involved berthing or unberthing a ship in between two moored ships, with a group of ships moored above and below the berth — again, without the aid of any tug.

Piloting has become less lonesome now. When VHF communication was not available a pilot was a very lonely person, especially on foreign ships where English was barely spoken. A deep leaded ship took 36 hours or more of piloting and anchoring to get down the river. Today a pilot can talk on the VHF telephone with any other ship within range; sometimes doing it a bit too much. He can even have direct contact with his office and relay messages to his home in an emergency.

Very few ships had radars in the old days. Piloting through fog was a nightmare. The method we had developed was to pass a buoy or an object and not lose sight of it astern till the next buoy was sighted — very much like a caterpillar or a leach that climbs the stalk of a plant till it bends and touches another stalk when it lets go the old one and gets on to the new one. Today, the ever-improving radar gives a clear picture and data in the thickest of fogs.

Bagnapara, where now the bustling Haldia port is situated, was a sleepy village. I remember anchoring ships in the deep water off Bagnapara. A lone bobbing flare of a *mashal* (flame-torch) of a fisherman winding his way home at night was the only light that could be seen ashore. The eerie howl of jackals in the still foggy night sounded closer than it actually was. Today thousands of lights in the port city mask the navigation lights at Haldia.

Another big change coming through is the mode of transfering pilots to ships at Sandheads. The two pilot vessels, one of which is always stationed at the mouth of the river, have become *white elephants*. The cost of replacement itself has become prohibitive. All over the world pilot vessels are being replaced by fast launches operating from sheltered waters.

We proposed to operate these fast launches from the shelter of Sagar Roads. A Vessel Traffic Management System (VTMS) is being installed on Sagar Island to guide the ships into Sagar Roads without a pilot boarding the ship. A pilot station would be established at Sagar. The VTMS would guide the ship upstream to

Sagar by giving the master of the in-bound vessel details of his position, the course to steer, set of tide etc. The pilot launch would go down to meet the incoming ship and let the pilot board her when she gets into sheltered waters. Sagar Roads may soon become a safe anchorage or harbour for ships coming into Calcutta.

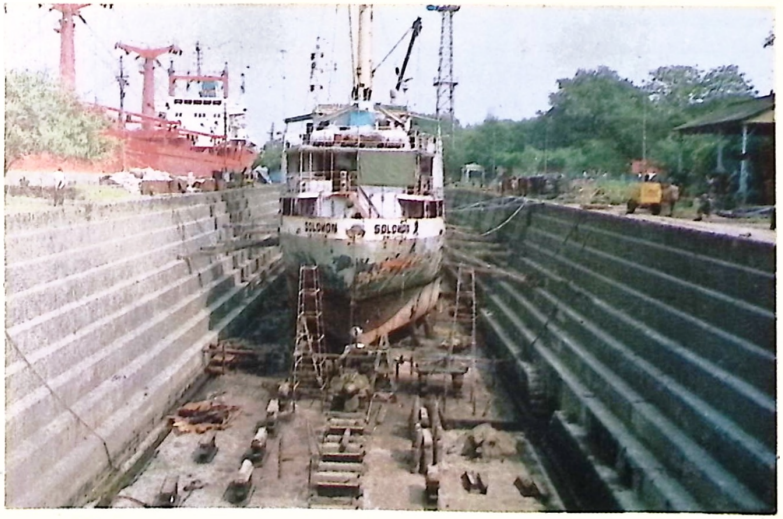
In spite of all the electronic aids, the hazards of the river Hughli still persist. The river is well known for its three B's — Bars, Bores and Bends. While most other ports have a single bar at its entrance, Calcutta has to cope with 16 bars along the river. These bars have to be crossed on the same tide by chasing the 'tidal occurrence' that takes place one hour later every 20 miles up the river. Turning a 550 feet long ship in a channel 850 feet wide in a vicious bore coming up the river at night is still the biggest hazard for a pilot. As for the bends in the river, they are so sharp that they restrict the length of ships coming into Calcutta. Haldia port, however, has no such restrictions.

In 1964 I had a nightmarish experience. While anchoring the *M.V. Martand*, a 10,000 DWT British ship, at Uluberia at night, the ship's anchor holed the ship and she filled up with water and got grounded. When a ship runs aground in the river Hughli, the hull undergoes stresses of 'hogging' or 'sagging'. If the sand from the two ends of the ship is scoured by the action of the tidal current the ship hogs, bends and breaks her back. If the sand or mud is scoured from the middle of the ship, she sags and breaks up. The first indication of a ship breaking up is when the wireless aerial stretched out between the two masts snaps or sags due to hogging or sagging respectively. When the ship is breaking up, the rivets joining the hull plates fly off like pistol-bullets. The *Martand* broke up on the sands of Achipur at Uluberiya. Part of the wreck can still be seen at low tide.

The other experience I had the same year was a massive collision on Moyapur bar. I was piloting the *M.V. Jaladharati* outward. A Chinese ship, *M.V. Oceanic Pride*, was coming up the river. On a bar, ships have to pass each other a bare 100 feet apart. While passing, the steering gear of the *Oceanic Pride* failed and the ship's stem pierced 30 feet into the side of *Jaladharati*. The ships were badly damaged.

Fortunately, in both the accidents of grounding and collision there was no loss of life. In spite of these accidents my love for the river never diminished. For the next 21 years I continued to serve the Ganga with care and reverence. Computers can work wonders but, for handling ships in the river Hughli we will still require quick judgement of a river pilot.

59. Ships at Netaji Subhas Dock



60. Dry Dock at Kidderpur

61. Ship repairing in Dry Dock

62. Ship Breaking at Netaji Subhas Dock

MEMORIES OF AN ENGINEER (I)

A.P. Chakravarty

It is amazing to think that I had been a member of the Port family for a period of 38 years in its life of 125 years – more so, as my participation was immediately after Independence. It was one day in December 1948, I was to meet Mr. Garvie, the last British Chief Engineer of the Port. "Well ! young man, you must have seen the Pontoon Jetty at B.E. College" ,I was asked. "If it was low water in the river in the morning and water rises say, by about 5 ft in the mid-day, how would you get into a launch at the jetty : by jumping or by a ladder" "I will just walk in", was the reply.

In February 1949, I joined the Port as 'Student Engineer', a fresh engineering graduate, last of its kind in the Port. What about training ? I was given one month's time to locate all the cranes and their particulars on a property plan of the Port. "Well ! you could know all the locations of the Port and all operational men just in one month's time", I was told. What a training !!

My first posting at KPD Lock Entrance, Dry Docks, Dock Berths made me very often wonder about the people who could construct such artificial dock system in the old days. Well, I was not then aware of God's design of things to come in future.

In the pre-independence days Calcutta Port was handling almost 50% of country's traffic, that too with manual labour. Timber Jetties at KPD - No. 15 to 21 berths could be seen with human conveyor system for loading of coal. Mechanical handling system was partially adopted in 1955.

One morning in 1954, while I was at Kantapukur area, a car stopped at my side. "Where is Suptd. KF's Office ? I am your Chairman. There is some labour trouble", whisphered a voice. That was Mr. R. Gupta, I.C.S. The voice still rings in my ears.

In mid-fifties, very often you would meet in the early hours of the morning on the quays, a hefty gentleman with shorts. One day I found him enjoying a game of 'chhawk' with the porters at the quays. This was Mr. R.K. Mitra, I.C.S.

In late fifties, one could notice people waiting with 'chits' at different working points in early hours of the morning to hand over these to a person moving in car every day and that was Mr. K. Mitter. He must know the daily position of traffic handled !

Ever since the fifties, the Port felt the need of a third dock system. In the early sixties, World Bank refused to assist as they thought indigenous efforts and resources were not sufficient to build the same. In 1964 or so, Port reached 11.00 million tonnes of traffic — a record handling. It was in 1967, a dynamic person could convince the need of third dock to be built at Haldia by indigenous resources only and then came the green signal. It was Mr. B.B. Ghose who dreamt of a Big Port of Calcutta.

On 22nd January, 1968 commenced Haldia Dock Project works. Construction activities pertaining to Dock System only were taken up by opening of three engineering divisions. All officers and staff were to stay in *chummeries* leaving behind their families for first four years or so. All works, civil, electrical, mechanical, estate, legal, labour, were placed under the able and unforgettable leadership of a single person, Mr. K.N. Sen. Most critical item of the dock works, Lock Entrance and Lead-in-jetty began and were followed up with activities for six Berths within three months.

Magnitude and intricacy of the work baffled us. The first three years were spent on sinking of monoliths. Imagine eight to ten storied building — 205 nos. of plinth areas, 1300 to 4000 sft sunk into the ground. Then came the sub-soil problem of deep excavation works at Lock Entrance. Committee set up by Government of India in late 1970 finalised their recommendations. Static water level underground were kept drawn down by means of continuous running of a network of 200 tubewells. Dewatering system was to run continuously till low level works were completed and Lock Entrance flooded. Thus dreadful and sleepless nights were spent for four years to complete the low level works.

Dock works took nine years whereas the planned time-frame was 45 months. A visiting team of British Engineers in 1970 felt surprised at the "planned" time-frame while they were carrying out a similar impounded dock with two berths for which they projected six years time. Indigenous firms with adequate experiences were not available for most of the components of the project. Government bodies were inducted as executing agencies resulting in changes in time and cost-frame. On one mid-day in October 1971 I walked with Mr. K.K. Ray in the site office at the bottom deck of Lead-in-Jetty. "You all will be sacked if you cannot complete the work by June 1973" told Mr. Ray with a grave face and then smiled at us.

Thus the end of the first phase of the project came on 28th February, 1977 under the leadership of Mr. P.C. Mitra, the first Engineer-Chairman of the port. Magnitude of the work can be guessed when staggering figures of materials needed for dock works only were 21 million cft of course aggregate, 12 million cft of sand, 1.60 lakh tonnes of cement, 52 thousand tonnes of M.S. Bars and structurals. Procurement of these materials in 1968 to 1976 was itself a Project.My unbounded gratitude to the great designer who associated me with the third Dock System for Calcutta Port.

Haldia days will ever be remembered by me. Sweet memories never go away. In my dreams smiling faces of my colleagues crowd and make me sad.

MEMORIES OF AN ENGINEER (II)

Bikash Ranjan Chatterjee

When I joined Calcutta Port in March 1957, hardly did I know what an eventful life and rewarding career awaited me. Calcutta Port was then leading amongst the major ports of the country, second only to Bombay. This was mostly for oil handling at Bombay. The 200 tonne Hammer-head Cantilever crane, commissioned at the Netaji Subhas Dock (NSD), in August that year, was soon to play a pivotal role in the Calcutta Port. I got immersed in intense activities all around. I felt a sense of belongingness.

Egypt had just lifted blockade of Suez Canal that year and there was a rush of shipping. It built up acute cargo congestion at Bullnose, NSD. One day, in the daily traffic co-ordination meeting, Mr. K. Mitter, the then Director of Port Operations, asked me, "Chatterjee, you come from the Army ; can you select a heavylift crane from their equipment workshop that we could hire?" I replied, "Yes sir, with your help that can be done." The 40 tonne LINK-BELT SPEEDER crane that we hired from E.S.D., Kankinara not only cleared the congestion at Bullnose, but also ushered in an era of Mobile Cargo handling in the port.

Who can imagine now, in the bustling Haldia today, how our staff at Anchorage camp lived with fresh water from the tubewells and lighting with petromax lamps when iron ore unloading commenced in 1959. I was one of the team that used to carry essential maintenance spares during our routine visits to a sleepy village sometime in knee-deep water. Our day would start at 4'o clock in the morning when I was to call at the Burdwan Road residence of the Harbour master. Together we could then board a launch at Calcutta to sail with the tide.

Shortly after getting my assignment of Haldia Dock Project, in August 1968, following a site visit one day, Mr. Collin Mcmahon, the then Traffic Manager, asked me, "BR, what did you do at Haldia ?" Promptly I replied, "We fixed the target of commissioning Haldia on the 7th of January, 1971, with 20 million tonnes of cargo handling capacity." Even now, I can see the smile on his face to hide his disbelief. Perhaps, destiny unseen, also smiled with him, and the course of events that followed became part of history.

One poignant scene comes flashing across my mind, when I recall one Saturday, in November 1973, I was working with Mr. K.N. Sen, the then Chief Engineer, Haldia, to prepare CPA's case on an escalation claim of TSL,on which I was to attend an arbitration meet the following Monday. I left his office around 2 o'clock in the afternoon. At about 7 o'clock that evening Mrs. Sen rang up to say that Mr. Sen had slipped on the bathroom floor and asked if I could come quickly. We were next door neighbors; I with my wife rushed to his residence at once to find him laid on bed ; his life had probably left him. Shortly afterwards, Dr. S.K. Das, CMO, tried to resuscitate him, but it was of no avail. His sudden loss left us stunned.

Before I end, I would recall one frightful event that took place in October, 1979. There was heavy flood warning almost everyday during end September, due to unusually heavy rain combined with cyclonic weather. We had set up a control room in CME's office manned night and day by officers. Afterwards, when all clear signal was received, we disbanded the control room. Then possibly, on 2nd-3rd October midnight a heavy gale struck with full fury when the river level was at its highest. The combined effect of wind power and unprecedented high water flung the Mitre Gates open in Kidderpore Dock (KPD). Deputy Harbour Master Mr. B.K. Bhattacharya, called at my residence at about midnight and broke the news. All telephones were dead and Portland Park was then in waist-deep water. We mobilised some of the key personnel of DBM from their nearby quarters and worked shoulder to shoulder throughout the night in torrential rain. With great effort we managed ultimately to close the Gates just in time before the tide receeded. A major calamity that endangered the entire shipping inside Kidderpore Dock was thus averted.

Year and a half later, in February 1981, I decided to hand over, and I left the port, with memories of the past still lingering.

63. Gear at Oil Jetty of Haldia Dock Complex

64. POL Pipe-line at Haldia Dock Complex

MEMORIES OF A FINANCIAL MAN

R.N. Roy

For one who has been associated with the CPT for more than three decades and a half, memories come crowding in. When I joined the port as a junior executive, Imperial Britain was on its deaththroes. Yet I was to work under two British Chief Accountants before an Indian CA took over. The first, an Englishman, owned a horse which regularly ran at the racing turf and this kept him pretty busy much of the time. He rarely stepped out of his room except when he made his way to the toilet room (about 20 yards away), which soon earned the sobriquet, *Dand's Chamber* , after his name. The next CA, was a Scot and his heavily accented diction often sounded alien to our native ears. One day, there was great commotion in the office : a file on 'Chasham' wanted by the CA was missing. The head clerk of the Record Section had searched for the file at all possible places, but it was nowhere to be found. In fact, nobody had even heard of such a file. It later turned out that the CA had misplaced his glasses and had tried his hand at speaking a Bengali word when he asked the head clerk to look for "Chasham" i.e. *chashma*.

My first Chairman was the formidable Sir Thomas Elderton, a Cambridge *Tripos* and a reputed administrator. Among his many achievements was a unique formula he had devised for working out port's annual Sinking Fund Contributions. Years later, it fell to my lot, as the FA & CA O, to justify this formula in response to C.A.G.'s objections.The Ministry upheld our stand and Sir Thomas lives on, in a manner of speaking, in his famous equation.

But life with C.P.T. was not all a cakewalk. During late sixties and much of the seventies we were continuously dogged by adverse bottomline of the port's accounts which was depressingly red year after year. World Bank officials, who visited the port about this time, marvelled at our financial ingenuity as we had not failed even once in servicing I.B.R.D. loans despite severe financial constraint. Nor did we ever default on payment of dues to the port employees, suppliers, contractors and essential expenses. How we managed this difficult feat must, of course, remain a secret. Suffice it to say that this involved shuffling with some funds, without financial irregularity.

Our appearance before the Privileges Committee of the Parliament in the seventies was an abrasive experience. The fact that no heads rolled and we came out of the ordeal unscathed must be put down as much to our pluck as to the benign hand of providence.

The port may legitimately lay claim to several 'firsts'. We were the first to introduce management accounting system at the behest of the World Bank. We were also the first to computerise our accounts and pay-roll of cargo-handling labour, after jettisoning the archaic Hollerith machines. As a result, our quarterly accounts came out within 15 days of the closing date. Later computerisation was extended to Provident Fund and Stores Accounting and to other areas of port activities.

One of the treasured moments of my tenure as F.A. and C.A.O. was when our daily rated casual clerical staff came to my room in a body with a token gift in appreciation of my role in inducting them into CPT's regular permanent roll of employees. It was also my privilege to witness the Haldia Docks being built, as it were, 'brick by brick' from scratch. CPT employees and contractors' workers had to undergo great hardship and deprivations in building a thriving modern dock system and an industrial township out of an sleepy village in Midnapore. This, therefore, is a fit occasion to recognise the great contribution made by them through 'blood, sweat and tears'.

It was my privilege to participate in the port's Centenary Celebrations in 1970. On this, the 125th anniversary, the port may well look forward to a great future. With modern ideas and techniques increasingly put to use in the management of its affairs, the CPT is no doubt destined to play a pivotal role in the development of the economy of the eastern region, especially, in the invigorating ambience of ongoing economic liberalisation.

65. Crane in Kidderpur Dock

66. Coal Wagon Tippler at Haldia Dock Complex

MEMORIES OF A CHIEF EXECUTIVE (I)

P.C. Mittra

My experience in the Port stretches a lifespan of 30 years. When I joined, the port was operating with pre-World War II technology — coalships being loaded manually in the form of human conveyor chain, handling break-bulk general cargo with mostly hydraulic-cranes and with only few electric cranes in the then modern King George Dock. Transportation meant steam-locomotives — 1908 North British Locos still operating. All floating crafts were also steampowered — with 1905 *Samson* floating-crane operating quite efficiently.

In many ways we started our life in the port in a challenging time — same as the newly free nation faced the problems of political and economic reconstruction. Our task in the port was modernising the operating system and procedures, including replacing and moderising all types of port-equipment. This led to having mechanical coal-loading plant at the Kidderpore Dock, semi-mechanised iron-ore berth at 5 K G Dock and slow conversion from steam to diesel motive power — that also involved retraining labour for operating and maintaining new equipment. The First and Second Five Year Plans kept us very busy in reshaping the port to become more efficient to meet new shipping requirements of faster turn-over.

Calcutta is the only riverine port in the country and thereby completely dependent on the way the great river Ganga, which has been the important source of advancement of our national culture, is affected by natural influences. The new post-war shipping technology posed an enormous problem of improving the river channel leading to the port. This problem of river improvement still remains as one of the main concerns of the port.

The fifties and sixties of this century were years of planning to resolve the main problems facing the port for serving the new shipping technology, efficient cargo-handling of large deep-drafted vessels and improvement of entire river system. To be in the midst of the activities, trying to solve the enormous problems facing the port, was indeed an exciting period particularly for a professional engineer. We were not only fortunate to be serving during this exciting period of planning and experiments, but also lucky to work under very capable leaders, outstanding among them were definitely late Mr. Kumar Mitra and late Mr. B.B. Ghosh. Their vision and mission guided the port in formulating the development of Haldia as an extention to Calcutta Port and taking steps for improvement of the river —like Farakka Barrage, river training works and continuous dredging.

The last ten years of my service in the port were mostly occupied in executing the extention of the port in the form of construction of new dock system in Haldia and improving the river system after the completion of Farakka-Barrage, various river-training works and capital dredging. The construction of Haldia Dock, both from civil-engineering point of view and from new cargo-handling equipment capable of serving the new shipping-technology, bulk-handling as well as container handling, forced us to face new problems and solving them successfully. The port took up the challenge of building the new dock totally indigenously with the least possible foreign exchange involvement. All handling equipment as well as the three Caisson-gates at the dock entrance were built and manufactured in India for the first time. Day to day involvement with each and every manufacturer was not only exacting for port-engineers, but also exciting, gaining new experience. The delay in completing the construction-work was eventually due to the new nature of the equipment manufacturing and circumstances for supply of raw materials and wagon shortages.

Our problems might have been smaller if we had outside assistance, such as World-Bank loan. But due to various reasons we were unable to accept World-Bank loan terms at that time of our port's history. Mr. B.B. Ghosh as the port leader decided to take the challenge to proceed without World-Bank assistance. From purely engineering point of view it was a decision

that helped national manufacturing capabilities and gave us a new opportunity to work in an exciting environment.

It is unfortunate that our Ministry in Delhi seemed to come to the decision that if Haldia could be separated from Calcutta, both ports would work more efficiently. Somehow Calcutta port was seen as a drag on the new Haldia port. It was a difficult period of my time in the port; but we obtained full cooperation and support of the entire shipping, trade and business sectors and also the government of West Bengal, to convince the Ministry that Haldia Dock System had been designed entirely as an extension of Calcutta Port. Separation would mean Calcutta facing extinction; but jointly the new dock-systems could contribute to regional development in a major way.

In conclusion I am delighted to learn that the Port would be celebrating the completion of 125 years. This reminds me of the celebration of Port-centinery in 1970. I was intimately connected with that celebration, led by our the then Chairman late Mr. N.C. Sengupta with late Mr. B.B. Ghosh as our Chief Guest. The exhibition was a great success depicting the port with its problems and development works under execution.

My service with the port, particularly as Chief Mechanical Engineer, Deputy Chairman and then as Chairman, was full of excitement and challenges and definitely most memorable. I take this opportunity to thank all port-officers for their cooperation and team spirit.

MEMORIES OF A CHIEF EXECUTIVE (II)

M.K. KAR GUPTA

The day on which I first travelled to Haldia was, unusually for the season, a rainy one. It rained all the way and when I reached the Port House, my feeling was one of relief that the journey was over and I had reached my destination safely. It was, perhaps, symbolic of the next eight and a half years of my stay in Calcutta port. Most of the time I was generally involved in turbulent situations, but more by good luck than due to any inherent qualities of head or heart I did come out from the port scene without, presumably, making too many gross mistakes.

The industrial relation situation at Haldia then was somewhat turbulent. The approach of the management was not willingly accepted by some of the representatives of the workmen. By and large, the workers themselves were a reasonable group. One could arrive at a relationship of mutual trust to let the workers and officers work on mutual understanding, respect and cohesiveness of purpose. This desirable situation, of course, was not achieved overnight and in the process we had several fairly prolonged strikes.

The one strike I remember particularly was however a short-lived one. When I first joined at Calcutta as Chairman, I suddenly heard that the crew of two of the port vessels had gone on a wild cat strike. While nobody was aware of the reasons for such a strike, the presumed leaders also could not be contacted. The strike continued, if I remember correctly, for about 48 hours and then it ended as abruptly and as mysteriously as it had begun. Such spontaneous turbulences were somewhat common during the earlier part of my tenure in the port. I hope the situation is much better now.

Even during potentially hostile situations, considerations of personal nature could be present at Haldia which, unlike Calcutta, was a comparatively small and well-knit organization and everyone knew everybody else. In the course of one of the more turbulent strikes, for example, a slogan was being raised by the demonstrators to the effect that the workers must become aware of the true nature of the Deputy Chairman (i.e. myself) and that they should ensure the burial of the Deputy Chairman at Haldia. I had an opportunity to emphasise the unreasonableness of this slogan and pointed out to the leaders that, as a practising Hindu, it was my earnest desire to be cremated and their intention to bury me would, perhaps, run counter to my religious belief. I was assured by the demonstrators that this particular mode of disposal of my dead body was included in the slogan only from "symetric" considerations of slogan shouting. At the appropriate time that my son would not be obstructed from setting the funeral pyre alight was also in their considered thoughts. Luckily for me, the final outcome of the strike did not necessitate a decision on this religious point.

I remember with mixed feelings an occasion when I perhaps hurt unintentionally the feelings of one of the port users. We had to propose some increases in the port charges and this was agreed to by all the port users represented in the Board of Trustees. One of the users, however, complained to me that they were quite disturbed by the latest increase in port charges as this made operations at Calcutta Port very costly. I assured them that we could offer them relief through lower stevedoring charges as we had already started undertaking stevedoring work at rates which were quite moderate compared to whatever the private stevedores charged. I informed the gentleman that the reduction in cost of operation due to lower stevedoring charges would more than neutralise the increase due to rise in port charges. It was only much later that I came to know that my suggestion could not have been well received as my visitor was himself a competitor in the field of stevedoring !

My attempts at introducing reasonable shop-floor discipline were the cause of a few somewhat unpleasant occasions where I was advised by eminent persons that while improvement of productivity was a good idea, looking after the interests of the workers of the port was even more important. Now-a-days, I feel amused when, while reading the newspapers, I find that points

which I had sought to make during my stay in Calcutta port regarding higher productivity, better work culture, self-imposed discipline etc. are now not only accepted as reasonable but are considered almost fashionable by eminent people at all levels.

In retrospect, my reminiscences about my tenure at Calcutta port are quite pleasant. Most of the labour leaders had warm personal relationship with me and with some of them I even now continue to have such relation. Although our attempts at undertaking stevedoring through the agencies of the Calcutta Port and Calcutta Dock Labour Board were quite successful, I had friendly and warm relationship with the members of the Dock Labour Board representing the employers who were our competitors in the field. I was lucky in having a dedicated band of officers who faced the challenges that cropped up from time to time not only willingly but very often beyond their call of duty. The Deputy Chairman (Calcutta) and the Deputy Chairman (CDLB) were sources of great strength and confidence to me. My relationship with the Haldia officers and workmen continued to be close even after my transfer to Calcutta and some of them do remember even now.

MEMORIES OF A CHIEF EXECUTIVE (III)

T.C. Dutt

I joined Calcutta port as OSD on 1st November, 1981. During November and December 1981, I extensively toured different establishments of the CPT all over the deltaic Bengal. These two months period of acclimatisation helped me immensely in my work. I joined as Chairman, CPT on 1st January 1982. I quit the post on 19th February, 1986.

These were four busy and exciting years indeed. There were challenges, successes as well as failures. Calcutta Port Trust comprised of Calcutta Docks System and Haldia Dock System has been a complex organism with varying degrees of complexity in several spheres and at different levels. To unite the efforts of such an intricately complex entity towards a common goal of its conservation and development required hard work and integrity in ones approach to it.

The challenges were obvious. Two widely separated dock systems having different interests, a multiplicity of trade unions, multiplicity of personnel having widely different functions some of which are not related to Port Management, severe financial crunch and the bad image were all there. It required clear understanding of the problems and unremitting toil to meet these challenges and to effect improvement in the operation of the dock systems and of their image.

There were some successes, such as increase of container traffic, establishment of a CFS however primitive, establishment of an ICD at Amingaon, sanctioning of a major dredging scheme for increasing the draft of the river, planning for the second oil jetty at Haldia, improving coal handling and the basic infrastructure in Haldia, induction of Management Trainees and intensification of training in the Institute of Port Management and not the least, conclusion of a good number of agreements with all the major Labour Unions and improving the physical image of the port by overall repairs of the yards and sheds. There were many failures also. Continued stagnation in productivity in port work, problems of river draft, poor state of cargo handling equipment, continued financial difficulties in spite of increases in port charges and delay in implementation of development projects are some such examples. And others too.

All in all, there are many sweet memories of those days. One very happy occasion was when during a nation-wide port strike the workers led by their Unions were persuaded to work to unload oil tanker in Haldia in national interest. One of the unhappy memories was of a period when lock gates were repeatedly immobilised thus affecting the basic interests of the port and the nation.

In retrospect, the happy memories overwhelmingly predominate. Going out to the Sandheads in the pilot vessels, going out with the dredgers and the river survey vessels, visiting the establishments in Frazergunj, Khejuri, Swarupnagar, Sagar Island, Nurpur, Falta, Shimulia, Kulpi, Dariapur, Rasulpur and many other such places and meeting so many faces, new and old, those hardworking and mostly satisfying days in Haldia, visiting so many schools and welfare institutions in the port area, I shall cherish for ever. And above all are the sweet memories of lasting personal relationships with so many workers, union leaders, officers and men and of their consideration, understanding, sympathy, kindness and friendship.

As expected, Haldia is forging ahead and is no doubt well on the way to becoming one of the few important ports in the country. At the sametime one would like to see faster progress of Calcutta as India's most important inland water transport centre.

67. Coal Conveyor at Haldia Dock Complex

68. Coking Coal Yard at Haldia Dock Complex

69. Fork-lift at Calcutta Dock System

70. Container Handling with Ship's Gear

CHALLENGES : BIG AND SMALL

CHALLENGES : BIG AND SMALL

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CALCUTTA PORT TRUST

C.S. KHAIRWAL

The Calcutta Port Trust, which is the oldest major port in India, has stepped into 125th year of its existence. It has been serving the whole of the Eastern Region and beyond by providing strong infrastructure for trade, commerce and industry. It has played an important role in the Indian economy. During the last few years, the world economic scenario has been undergoing a sea-change and Calcutta Port should be on its way to take full advantage of the opportunities thrown up by such changes, to face the challenges and play the role of gate-way port re-linking Eastern India with the rest of the world.

With the liberalisation of economic and trade policy, Indian exports have shown a remarkable growth. The Indian ports will have to upgrade their systems to match future requirements. Calcutta Port Trust deserves compliment that they have already introduced innovative management systems, which, will hopefully be able to match the rapidly expanding demands of international trade.

Calcutta is the only port in India which unfolds the full gamut of responses to the challenges emerging from the macro-environment over the century. The old riverine jetties have given way to impounded dock systems and thereafter to a modern cargo handling complex at Haldia. Contraction, consolidation, transformation, relocation alongwith new construction and development have always been the hall-mark of this port. In respect of total income and vessel calls, Calcutta Port Trust is ranked second amongst the major ports of India. The value of cargo handled is the third highest and it ranks first in the rate of reduction of manpower during the last decade.

Upto 1954-55, the Calcutta Port was the leader. As against 21.8 MT of total traffic passing through all the major ports, Calcutta handled 7.9 MT. In 1993-94, Calcutta Port handled 18.46 MT of traffic. It is expected that by 2000 AD the CPT will be handling about 25 MT of cargo as against the current level of 18.46 MT. The increase would arise primarily in respect of petroleum and related products, coal, coking coal and containers. The CPT also handled more than one lakh TEUs of container traffic during 1993-94. Significantly, the growth of traffic relating to the petroleum crude and products has increased from 5.1 MT in 1984-85 to 8.7 MT in 1993-94 and that of coking coal and thermal coal from 0.036 MT to 1.66 MT and from 2 MT to 3.4 MT respectively.

In the 8th Plan (1995-97) the allocated outlay of the Calcutta Port is Rs. 421 crores. Of this, the share of Calcutta Dock System, Haldia Dock Complex and River Related Schemes is 155 crores, Rs. 190 crores and Rs. 76 crores respectively. The objective is to match the requirement of shippers and importers by reducing cost, improving services, selectively modernising and encouraging private sector participation. Stress is being laid on accelerated growth of container traffic, thermal coal, coking coal and other dry-bulk cargo. Waiting time of ships for berths in ports are sought to be reduced through development of requisite facilities, while emphasising privatisation, environmental upgradation and better aggregation and dispersal of cargo.

With more and more emphasis being laid on environment, CPT has embarked on a systematic programme to improve the quality of marine life and its immediate environment through various anti-pollution measures like Ballast Water Treatment Plant, procurement of Oil Recovery-cum-Garbage Vessel etc. The Port has also taken up massive afforestation drive and more than two lakh trees have been already planted within the port premises.

Being the only riverine major port, Calcutta has to perennially fight with nature to maintain the required navigability of its channels. Calcutta Port has been able to improve the draft available in the river Hugli during the last few years. This would help the port and ships to carry more tonnage per bottom. Calcutta Port has also taken up various other projects to upgrade its infrastructure, particularly in the area of providing better transport network with its rich hinterland and for

improving its cargo handling facilities, which would undoubtedly benefit the Port users in terms of reduced over-all cargo handling cost. The expertise and growth of Calcutta based workshops and its personnel in the area of ship repair is reputed all over the world. The scheme for modernization of the existing dock-yard facilities is now under implementation by the Calcutta Port. With a view to provide more effective and safer guidance to shipping, Vessel Traffic Management System project has been taken up by the Port. Another project on Differential Global Positioning System, based on the receipt of signals from the satellite in orbit has also been taken in hand.

The Calcutta Port has become the heart of the transport arteries in the Eastern region which facilitate internationalisation of production. Port's efficiency has become a prerequisite for participating in the globalisation process. The Calcutta Port has, however, not been able to take up some of the new schemes, which have to be postponed beyond the 8th Five Year Plan due to constraints of resources. It is hoped that with the bold initiative taken by the Government of India to partially privitise the port services, the major ports will play an increasing role in the development of overall imports and exports of the country. With the growing emphasis on globalisation, the share of containerised cargo will significantly go up. There is also the need to improve the management system, particularly in the containerised cargo sector through the introduction of computerised container handling system. The CPT will need to establish coordination with other modes of transport like rail, road and all other inland haulage systems.

SYSTEMS, PROCEDURE, SERVICE & BEHAVIOUR : USER EXPECTATIONS

Sanjay Sen

Growing international trade is transforming to-day the world economy into a single system by way of integrating world transport activities. Ports are naturally being incorporated into this huge, changing and competitive system. Over the past thirty years, world trade has been growing faster than world production. To-day, world production is more internationalised than before. This has led to changes in shipping, port and land transport which provide the new economic and technical environment of the world trade transportation system. Modern ports are no longer passive interfaces between sea and land transport. It is the natural point of intermodal interchange. Ports no longer run in isolation. They play an active role in the world transport system and trade.

II

Several major trends in the economic development of port environments should be mentioned. These are: a general shift towards liberalisation, or "de-regulation" of transport services, growth of multi-modal transport, reorganisation of shipping fleets, specialisation and increasing size of vessels, and new requirements of shippers.

In certain regions, such as North America, *de-regulation* of transport policy has been an important factor for changing and restructuring economy, which has affected ports as well. *Liberalisation* of shipping in South America (abandonment of the cargo reservation system) is profoundly altering the foundations of maritime policies and has direct impact on ports. An increasing number of ports, including those in developing countries, are being affected by the introduction of multimodal transport which is leading to accelerated containerisation in transhipment of general cargo. This is accompanied by modification of procedures and methods with changes at both the legal and administrative systems. The shipowners have used the flexibility in the use of containers by way of replacing direct lines from port to port by networks of services organised around transhipment ports. By grouping cargo traffic, they have been able to increase the size of vessels and to make full use of their capacity as also to reduce unit costs and shipping times. There is increased use of specialised vessels (for bulk, neo-bulk and special traffic) as well as of multipurpose RO-RO vessels, which carry greater variety of goods packed in different ways. The internationalisation of markets and increase in competition have led shippers to make greater demands on international transport and to demand better port services. In addition to the demand for the lowest possible port costs, they are also concerned about lower total port costs (including ship and cargo transit time), steady flow of goods (no requirement to hold stocks), delivery of goods in sound condition and extension of the range of services offered, such as distribution or assembly activities, or processing of raw materials.

There has thus been a change in the role of ports. Port activity is no longer confined to the harbour and the area of land around it. On-shore, it now takes place all around the starting point of the transport chain. Progressively during the 1950's and 1960's, some traditional ports (which had previously been mere transport centres) have become commercial and industrial service centres, adding considerable value to the goods handled. During the last 10-12 years, this process has accelerated in some very busy ports. There has been a diversification of port services which now extend beyond the conventional port boundaries. Distribution activities constitute one example. Ports moving in this direction are thus becoming logistic platforms for international trade.

The policy of the service providers, viz. shipowners etc. is vital to the port's existence. The shipowner's activity is largely determined by the opportunities offered by shipbuilding technology. There are still to-day many conventional general cargo vessels as the lines serving particularly the developing countries. It is likely that in the future there will be only three major categories of cargo ships, such as bulk carriers (for dry

or liquid cargoes), container ships and conventional specialised ships or RO-RO vessels. What will be the size of these ships ? This question is a key parameter for port development.

The technological developments make it necessary for ports to follow the trend and equip themselves accordingly, particularly as regards infrastructure, port equipment, the area of other support or associated services. Large bulk carriers proceed to berths where the equipment permits their unloading in only a few hours, which makes it necessary to provide large storage facilities for goods awaiting re-shipment. The growth of the use of containers makes it necessary to provide not only for their handling, but also for their repair. The requirement for collection, processing and circulation of data is steadily increasing.

No port policy can ignore the sociological phenomena. Even with rising living standards, the need to ensure the safety of persons and of goods is increasing. This is true with regard to both workplaces and the human elements of all port activities. It affects all operations at the port. Another concern is the respect for the environment. Environmental harm or damage is being less and less tolerated. So the port policy is gradually changing to minimise environmental pollution in port areas.

These new economic, technological and social developments represent a challenge for ports, not only as regards their infrastructure and equipment, but also in the areas of organisation and management. In the field of shipping, there has already been an improvement in organisation and management methods so as to meet better the requirements of the market. Emphasis is placed on efficiency, i.e., on speed in decision-making, speed in adaptating to change, and elimination of the slightest deficiencies in operation. All these have effects on cost reduction. Ports cannot ignore these changes or the requirements of their partners in the transport chain and, therefore, need to modernise their organisation and management, if they are not to lose traffic through lack of competitivity.

III

Who are the users of the ports ? Logical answer would seem to be the shipowners and the shippers. That answer is not complete. There are direct and indirect users of ports, intermediate and final users. Shipowners are direct users of ports but they are not the final users. The final users are those who really pay for the port services. The totality of the port charges borne by the shipowners are passed on, through the importers and the exporters, to the producers of the goods exported from a country and to the consumers of the goods imported into a country. The same applies to the other intermediaries, namely the forwarding agents, who pass on their port costs to the producers or consumers whom they represent. While there may be cases where an increase in port charges does not immediately result in higher sea freight, in the long run the shipowner will not absorb this increase and will pass it on to the consumer of the cargo.

The country's producers and consumers are, therefore, the final users of ports. What they seek from ports is service of the best quality at the lowest possible cost. It is necessary to point out that the costs charged to the users when a ship and its cargo call at a port (e.g. pilotage, towing, port dues, agency fees, etc.) are only one element of the total cost of the ship's call at the port, which also includes the cost of the vessel's inactivity (waiting time and cargo handling), temporary storage of cargo and any loss or damage. The port that is expensive for the users is however not always the port that charges the highest tariffs. It is usually the port where the services are poor because of delays, inefficiency and damage. Securing the lowest possible overall port transit cost for the final users is the aim generally expressed by shipowners and forwarding agents when they use a port. In other words, the shipowners' objectives are the same as those of the final port users.

It is in this sense that provision of good service rendered to the country's producers and consumers, provided there is some competition between shipowners so that they pass on to the final users, the gains in productivity realised through better service by the ports assumes so much of importance. Cost efficient and prompt port services are imperative for boosting exports. Cost and quality of the services provided, therefore, determine the user perceptions of the port. In the Indian context the delays and difficulties faced by shipping lines lead to additional burden on shippers, as these are mostly passed on to them in the form of higher freight rates.

The important aspects of port development that affect exports and conseq-uently shape user

expectations about the port are as follows :

(a) lack of availability or inadequacy of matching cargo handling equipment in ports, heavy down-time equipment, etc.;

(b) inadequacy of infrastractural facilities like drafts, tug power, etc., to receive vessels of different size and variabilities;

(c) high port tariff, absence of any institutional mechanism to discipline the providers of peripheral servcices;

(d) circuitous procedures and documentation;

(e) low productivity and

(f) sharp fluctuations in sea freight and unhealthy practices resorted to by various agencies involved at the point of port interface.

The charges that the shipper has to incur within the port for various services should be competitive. It does not matter whether it is payable to the port administration or to any other agency operating within the port premises. In other words, its incidence on total transportation cost, which ultimately gets loaded on to the landed cost of the consignment at the destination, should not be dis-proportionately high. Only then can the shipper successfully compete price-wise in the international market place. If the shipper has to continuously pay for the inefficiencies of the port system, even though his product is otherwise competitive on the price and quality, there can be no hope that the challenges thrown open by globalisation of the Indian economy can be met at all. A common approach needs to be brought to bear upon the problems rendering cost efficient service to the export trade and an integrated view should be taken of the total port costs.

It would be quite pertinent to quote the World Bank here: "In many respects, the ports have been caught by surprise. Containerisation, increasing ship sizes with complex navigation and deep draft requirements, growing pressures by the trading community, but also by ship operators for faster and reliable services are all phenomena for which most of the national ports were totally unprepared. These ports are stuck with configurations of sea and land side infrastructure designed for ship and cargo movements typical for sea trade decades ago. Unfortunately, also the regulatory provisions for port services, the organisational arrangements and quite frequently — the management attitudes — reflect practices which had their validity in the past but are hopelessly inadequate for meeting the requirements of today's trade and transport markets"

According to the World Bank study, actual port capacities could be boosted by at least 35 per cent without any major investments, if prevailing procedures and practices were brought more in line with modern port management concepts. Particularly, the following factors require special attention :

(a) In the case of container management there is no need to stuff and strip more than 90 per cent of cargo within port perimeters, as cargo and containers block precious dockyard and warehouse space and result in aggravating pre-berthing delays and long service times while ships are loaded or unloaded.

(b) To serve cargo traffic efficiently and economically, port managements should draw up concrete programmes for inclusion of specialised container handling equipment and computerisation of container yard management. In most of the modern ports, computers execute and monitor each operation. Computerisation in ports is also integrated with customs clearance to facilitate faster movement of containers and substantial reduction in paper work.

(c) Inefficient deployment of port equipment has created hardship in ship and cargo movements. Cranes and lifting gear are not efficiently deployed, maintenance standards are poor and labour productivity is chronically low. Additional costs caused by inefficiencies in port container handling are estimated as US $ 208 per TEU on average.

(d) There is also a clash between service mechanisation and labour. Efficient modern cargo handling arrangements require a degree of mechanisation, which goes usually against employment objectives. The port industry is one of the largest single employers in India. Going by the experience with successful labour redundancy schemes in other ports elsewhere in the world, a major cut in the port labour force could in fact result in substantial productivity improvements.

With containerisation having come to say and with the introduction of large cellular vessels, it would not

be possible to attract mother ships unless port facilities are substantially improved. In fact, Colombo has emerged as a major hub for large cellular vessels in the region. This had led to a situation where Indian ports are being reduced to the status of feeder ports. It is, therefore, essential to concentrate efforts in the direction of providing modern container handling facilities in few selected ports. This would also call for creation of adequate railway infrastructure for inland movement of containers even over long distances to and from these ports and other related infrastructure. In fact, infrastructural bottlenecks at India's ports continues to be a millstone around shippers' necks and are seriously jeopardizing the country's export targets.

An illustrative case would be the experience exporters had in the beginning of this year at the Tughlakabad (Delhi) Inland Container Depot (ICD), which is a major transit centre for containerised cargo to ports of Bombay, Jawaharlal Nehru and Kandla. The Container Corporation of India (CONCOR), which manages the Delhi ICD, stopped accepting cargo for movement to JNPT from January 3, 1995. According to CONCOR, it was forced to take this drastic decision following the massive congestion at the port due to undue delay in unloading containers at JNPT. As many as seven trains with containers were held up, upsetting all shipment schedules. The JNPT authorities laid the blame squarely on CONCOR for the congestion, saying that it failed to load containers blockwise as suggested by JNPT. If containers were loaded blockwise, it would be easy to unload them at the rail terminal, argued JNPT. CONCOR countered the JNPT argument, explaining that it was not operationally possible to load containers blockwise and the congestion at the port was the result of inefficient management of the rail terminal by JNPT. While CONCOR and JNPT blamed each other, export schedules of the shipper went haywire, deadlines were not met and export orders were cancelled. Whilst the above problem might be a temporary one, it is reflective of the infrastructural, managerial and other constraints within which Indian shippers today have to compete with their counterparts in the international marketplace. While volume of cargo handled by each port has gone up substantially in the recent past, infrastructural facilities have failed to keep pace.

Labour and equipment productivity is also a major area of concern in ports. Manning scales at the ports in India compare very unfavourably with those in many other ports in South-East Asia. Even where operations are standard, in India manning scales vary from port to port. Rigid out-dated practices are exploited by the labour (represented by militant unions) to its advantage. Stevedores also have a hand in holding up container handling operations to protect their own profits. Landing agents delay off-loading from the ship and later induce delayed off-take of the consignment from the warehouses to gain time for speculative profits.

There is also a very strong need for upgradation of existing norms for labour productivity. Institutional factors play a significant role in keeping productivity close to historical levels, even though there is scope for considerable higher output. Time is deliberately wasted and interested parties connive to use idle time at berth to maintain low productivity, because too high an output per shift would lead to upward revision of norms. Delay at ships' option, wastage of time in documentation, and due to non-availability of labour or breakdown of equipment, serve as ideal excuses. This helps workers to earn incentives for achieving above-norm levels. Ports must, therefore, evolve without any delay, specific performance norms, manning scales, productivity parameters , etc., for each port and for each activity.

Not surprisingly, plan allocations are not enough to meet the investment needs of ports in infrastructure. This is where the role of the private sector assumes importance. Induction of private capital and management in ports has been a subject of protracted debate in India. At this juncture, when port managements are faced with the task of finding invisible resources to finance even essential development programme, the time to give practical shape to privatization concept is overdue.

The emerging consensus is for selective privatization of port services. However, despite the tall talk of privatization and modernisation, not much headway has been made. As per the Planning Commission's estimates, Indian ports will have to handle about 275 million tonnes of cargo by the turn of the century. This is against the projected capacity of 242 million tonnes, leaving a gap of 32 million tonnes.

Even now, capacity is being over-utilised. All the major port trusts together handled 179 million tonnes cargo in 1993-94 against the ports' aggregate capacity of 172 million tonnes. During the first six months of the fiscal year 1994-95, all major ports together handled 90 million tonnes of cargo as against 83 million tonnes

in the corresponding period in 1993-94. Going by the current growth rate in traffic, the port capacity would have to be raised to handle another 32 million tonnes by the year 2000, involving an investment of Rs. 3,200 crores.

Efforts are on to tap private investment in a big way. Initiative has been taken by government to allow private investments in port projects. The government has allowed port trusts to give on lease berths to foreign shipping lines. Similarly, private parties have been allowed to set up container freight stations (CFSs) and container depots. The government has identified port projects worth over Rs. 2,000 crores for private sector investments. It is reported that the Ministry of Surface Transport is receiving encouraging response from private entrepreneurs. But only time can tell how many projects will be implemented ultimately.

It is evident that if ports embark upon the projected targets for the year 2000 without a clear-cut strategy and determination to resolve some basic issues, they will not be able to meet the emerging challenges. Any restructuring of the present system, one has to appreciate, would give rise to other formidable socio-economic problems as to compel managements to underplay the need for modernisation. A case in point is the Central Warehousing Corporation's (CWC) Container Freight Station at Calcutta, which is not in operation even after 18 months of commissioning. If in the closing years of this century the ports have to live with this situation and carry the burden of man-power far in excess of their need, its consequences on the development of our international trade cannot but be adverse. It may be noted here, given the nature of their close association with international shipping, port management will find it increasingly difficult to live with this situation for long.

Modernisation of ports by itself, will not give the system the strength required to match the level of efficiency which is seen in ports in the industrialised nations. A new set of strategies at administrative and fiscal levels will have to be evolved. The recommendations of the high-level Group on Facilitation of Exports through Seaports, set up on 12.3.'94 under the chairmanship of Shri D.K. Afzulpurkar, Chairman, BPT, which examined and analysed issues crucial and germane to efficient and quick clearance of cargo at the seaports, need to be studied and implemented without delay and in earnest. The role and function of the port has to be re-defined in the light of changing environments in which it is positioned in order to perform effectively. Attention would have to be focused on improving the financial profile of ports. If the port management does not achieve the desired improvements in productivity and efficiency and eliminate wasteful expenditure, financial viability would prove elusive for ports even with envisaged increase in traffic volumes. The realignment of activities to confirm to the new environmental discipline is also no longer an issue which can be relegated to a position of insignificance for long.

71. Container Handling on Shore by RTG

72. Container on Road

MODERNISING COMMUNICATION At CALCUTTA PORT

R. K. Arora

Shipping transport has always enjoyed a unique position in the overall transport system. Statistics reveal that it is the most cost effective medium of transport for large cargo and is the least energy intensive system. As much as 40% of the international trade uses this medium. The concept of containerisation has enabled the shipping transport to compete further with other means of transport. In India, the shipping transport traces its origin to the days of sea-farers when trading overseas primarily used to be through this medium. It has developed to a point that 40% of its trade is by sea, even though about 65% of ocean trade in India is carried by foreign vessels. Hence, there is considerable scope for increasing the share of the nation in ocean trade.

The ports represent the heart of the shipping transport. It is important that this "heart" is sound enough to make the transport system efficient. Electronics and Information Technology have played a key role in improving the efficiency in port operations. Indian ports may not stay beyond the domain of such technological advancements if they wish to be efficient.

There are both challenges and opportunities in today's context for improving our port operations. The challenges are manifested through increase in size, speed and the sophistication of the vessels, and consequent congestion and competition with other ports and shipping lines. The opportunities, on the other hand, are liberalised policies of the Government, increasing private sector investment in infrastructural facilities, and improved mechanism such as inter-modal transport and communications. There are also other issues such as legal regime, standards, tariffs, labour laws, port topography and geographical location which influence port operations.

Where does Calcutta Port stand in such a scenario ? Being the oldest major port in India, it has served as an important infra-structure for trade, commerce and industry. Some of its land marks are that (a) it is possibly the cheapest port, (b) it has the largest (200 Tonne) cantilever-crane, (c) it has handled ships upto about 1,13,000 DWT, (d) it is the first port to reduce its manpower to improve productivity and (e) it has responded to private sector interests. The impediments, however, are that it is a riverine port and thus has attendant problems of tide, silting, dredging and navigation.

What can electronics and information technology do to overcome these problems while retain all its advantages ? Already the port has implemented the use of computers in the main operational areas, a vessel traffic management system, an accurate radio positioning system, etc. to improve its operations. But these have largely been implemented somewhat disjointedly in responses to the necessity felt at particular points in time. What is needed is an integrated system of Command, Control and Communication of which the part achievements can become the building blocks and can together help improve port operations. The major functional blocks considered for this purpose are (a) Integrated Management Information System (IMIS), (b) Effective intra- and inter-port Communication System (CS), (c) Automated Handling in Port Operations (AHP), (d) Traffic Monitoring and Guidance (TMAG), (e) Port Instrumentation (PI).

The IMIS is to primarily monitor, collect and update information in real time from various departments of the port such as commercial traffic, marine, harbour, port handlings, freight, insurance, customs etc. It works with an electronic highway, using optical fibre and radio link, connecting servers to end user terminals.

The CS needs to be very effective. A comprehensive CS consists of conventional electronic exchange providing inter-connection by various port departments with public switched network and linked with wireless user phones spread throughout the port for intra-port communication. It is also desirable to establish VSAT based communication between far off places of the port and inter-port communication as an overlay over the land lines. This would also help to provide connectivity with national and international networks. The system

would also integrate pagers and hand-held data entry terminals for effective instant communication as also field data collection with mobile units which can down load data to the computer in the office premises. A communication link using INMARSAT-C or M with the ships directly provides additional flexibility in communication and advance information to the port.

Port handling needs to be automated not only for container operations and freight stations, but also in other loading or unloading operations using programmable logic controllers. A further introduction of electronic identification (EDI) system to detect movements of containers, wagons, industrial loads, etc. in and around important locations of the port, which will feed the realtime data on these movements to the IMIS, will make handlings more efficient, particularly when inter-modal operations are involved.

The vessel traffic management system could be further upgraded to cover closer port approaches and provide outputs to port administration computer for IMIS. It can also be made more effective if ship position data could be integrated using DGPS, DF and other opto-electronic sensors. Its software could also be augmented for accurate hydrographic survey, essential for optimum dredging of the channel. Once it helps in acquiring a positive control of ships by the controllers in the navigable channel, all eventual benefits of the system could be derived. The ancourage area in that case could be brought closer to the closest land point overlooking the channel. This would lead to considerable economy in port operations without compromising safety.

Port instrumentation covers berthing aids, electronic guidance in the channel using EPIRB, Racons, radio buoys, etc. Pollution monitoring devices, meteorological sensors, survey ships using electronic charts, besides data loggers, etc., together provide improved safety in navigation and are quite essential a requirement of the port.

Each of the above applications calls for a substantial investment by the port. However, they in turn lead to improvement in safety and efficiency directly or indirectly. An integrated system of Command, Control and Communication is suggested for the Calcutta Port on a modulator basis employing some of the existing systems and upgrading and setting up new balancing system, for executing various functions so as to realise best results from investments.

POLICY REFORMS AND STRUCTURAL CHANGES IN INDIAN PORTS

B. J. Thomas

When the planners set about designing the present facilities of the Port of Calcutta in the later part of the 19th century, they could not have imagined the changes that would take place in cargo handling operations over next 125 years. The two major enclosed dock systems - the Kidderpore Docks opened in 1893 and the Netaji Subhas Dock in 1928 — were constructed to reduce inland transport distances to a minimum and were designed to accommodate relatively shallow draft vessels, many still dependent on sail. Because the industry was then so dependent on manual handling methods the narrow quay aprons and storage sheds were designed to reduce the horizontal distance of transfer of cargo from ship to shore to a minimum. Although there has been steady and continued progress in ship building and cargo handling technology throughout the 20th century, the past 40 years have witnessed a period of rapid change and an era of specialisation accompanied by spectacular growth in international trade. In this period very large dry and liquid bulk carriers have appeared on the world's major shipping routes and there has been a remarkable transition from conventional to what are termed 'unitised' means of carriage in the general cargo trades. These developments in the bulk and unitised trades have radically altered ocean transportation, changing trading patterns, ship routing and itineraries, ship design and size, cargo handling equipment and operations, inland transport, commercial practices and customs procedures, employment and working practices.

Technological development in shipping have placed considerable pressures on long established ports and many of them have led to adapt their infrastructure or relocate their facilities in an attempt to retain traffic and commercial influence. The Port of Calcutta has faced severe physical and commercial problems resulting from its location and the constraints imposed by the difficulty of vessel navigation and the shortage of land available for port development. The development of the satellite port of Haldia and the conversion of facilities to new uses, particularly for the handling of unitised cargoes, in the Netaji Subhas Dock in Calcutta are examples of strategies designed to overcome these difficulties. It is evident that developments in cargo handling methods have brought great visible changes to the landscape of seaports. What is not so apparent, however, is that the technological revolution in shipping has also had a direct impact on the commercial function of ports and changes just as great have been necessary in administrative and managerial systems.

The major Indian seaports now stand on the threshold of another revolution with the Government of India's (GOI) proposals for policy reforms and radical changes in the way the country's ports are administered. The proposed reforms are designed to enable Indian ports to respond to the significant changes that have taken place in the commercial environment in international maritime transport and to the intense interport competition these have generated. The reforms are aimed at improving the efficiency of maritime transport and the management of Indian seaports to ensure that the industry meets the needs of the nation into the next millennium. This essay briefly reviews the background and reasons for these administrative changes and examines the nature the reforms may take.

II

Ports in India are governed by two main laws — The Indian Ports Act (1908) and the Major Port Trust Act (1963). The 1908 Act is concerned with the right of the government to legislate or impose regulations on ports and the 1963 Act relates to the operation and control of India's major ports. The eleven major ports in India are under the control of the National Government through the Ministry of Surface Transport (MOST) whilst the 138 minor ports are administered by the individual states. The major ports are administered as Port Trusts, which are autonomous bodies with a non-profit making objective, although they must deploy their assets in the most profitable

manner. The Port Trusts have the power to administer the port, to provide and operate ship and cargo handling facilities and services (pilotage, cargo storage, container freight station operations, etc), to execute harbour works and to levy rates and set charges for port services.

The Port Trusts are administered by Boards of between 17 and 19 trustees, appointed for 2 year terms by the GoI. The composition of the Boards gives importance to government and public enterprise representation rather than to the private industrial sector and includes representatives of port labour. The trustees are bound by directions on policy and by written orders from the GoI. Regulations issued by the Board of Trustees, changes in the tariff schedules, appointments to management positions, the preparation of revenue and capital budgets, the appointment of consultants, the issue of leases of more than 30 years duration and the conditions under which loans are obtained, are all subject to prior approval and/or the sanction of the GoI. The Chairmen of the major ports, who are also the Chief Executive Officers, are usually recruited from the Indian Civil Service cadre (IAS) or from the navy. Within the major ports the management structure normally consists of a large number of functional departments supported by a rigid organisational structure with many tiers or layers of authority.

The major ports in India can be defined as service ports. They each conduct, with their own staff and equipment, all port operations, pilotage, towage and other marine services together with shore cargo handling and storage. Cargo handling on board ships and the receipt and delivery of cargo to/from exporters and importers premises are mainly undertaken by private organisations. The shortage of port equipment has encouraged some private companies to provide these facilities and to expand into the provision of container handling services in the dock estates.

A distinctive feature of most Indian seaports is the complex and fragmented structure of employment. In general, it is the practice of each Port Trust to supply managerial, supervisory, clerical and shore labour to undertake and oversee cargo handling operations on the quayside, in the transit sheds and in warehouses. Cargo handling on vessels is performed by stevedoring companies who engage dock workers registered with the Dock Labour Boards (DLBs) or from organised labour pools administered by the stevedores or ships agents. In most ports where dock labour schemes are in force, registered workers are also engaged to pack and unpack containers within the dock estate.

Indian seaports are major employers of labour with perhaps in excess of 250,000 people employed directly or indirectly in port activities in the 11 major ports. The major ports suffer from an excess of manpower. Other related labour problems are deficiencies in the current wage structure, restrictive practices (excessive manning levels, bad time keeping or deployment of labour, unofficial payments etc), poor labour productivity, complex industrial relations systems, inadequate training and personnel management policies and a poor safety culture.

The present institutional and organisational framework of the major Indian ports suffers from a number of deficiencies, such as :

(a) The close control by the GoI leads to centralisation of power in the MOST and at the senior management levels within the Port Trusts. The pervasive role of government results to civil servants scrutinising all management actions and decisions, however insignificant.

(b) As a consequence, Indian seaports are treated as an extension of government and as public utilities and not as commercial undertakings. Government rules and regulations are strictly applied restricting ports from acting in a commercial manner and responding quickly to new market opportunities.

(c) As the sole or major provider of port services, the major Port Trusts have acquired strong monopolistic powers. This has suppressed the level of intra- and inter-port competition and removed the incentive for greater efficiency.

(d) The Port Trusts have became large bureaucratic organisations employing a substantial workforce. This has led to an authoritarian or *top-down* style of management and decision making has become a serious bottleneck.

(e) The organisational structure of most Port Trusts is outdated. In the majority of cases the organisational structures were created many decades ago when the ports' traffic base was largely captive, consisted mainly of conventional general cargo, and inter-port competition was poorly developed. The present organisational

structures have many levels of responsibility and authority and rigid functional groupings tend to erect barriers between departments leading to poor communication channels.

(f) A *mechanistic* style of management has evolved with strict adherence to prescribed rules and regulations and where actions are guided by impersonal rules. As a consequence, there is little opportunity for managers to be innovative and to use their initiative, and there is too little accountability in the workforce.

(g) Employment practices are archaic. The major ports have persisted with long established and complex employment practices. There is very strong trade union representation and a deep resistance to change on the part of the workforce.

The Port of Calcutta suffers from many of these administrative problems and deficiencies and they are compounded by the physical constraints and commercial barriers of attracting new traffic and business to the port. The present organisational structure and management style of most of the major Port Trusts are unsuited to modern port operations and to today's competitive business and economic environment. Mechanistic organizations lack commercial enterprise or innovativeness and fail to develop a highly motivated and professional labour force. Replacing these characteristics with modern management systems must assume greater importance in the future if the Port of Calcutta is to retain its market position and to develop new commercial opportunities. Developing a more efficient and dynamic style of management is one of the primary objectives of the proposed port reforms.

III

A feature of the past 15 years in the transport sector has been the promotion of policy reforms by governments and international lending agencies. These reforms have been introduced as a result of political transformations, of changing economic circumstances and, in many countries, as a response to the debt crisis and the imposition of structural adjustment programmes. A structural adjustment programme, in the general sense, is the process of deliberately adjusting the structure of an economy to mitigate the effects of negative shocks or to take advantage of new opportunities. Structural adjustment programmes are now being implemented by over 70 countries worldwide, including India, with the support of the International Monetary Fund (IMF) and the World Bank. These programmes are designed to stablise the economies of countries and to introduce adjustments designed to promote sustained economic growth.

Structural adjustment programmes have been prompted by the recognition of governments of the need to respond to changed macro-economic conditions. Central to these reforms are institutional changes, particularly the reining-in of the role of the state, the promotion of the private sector and the restructuring of state corporations. These actions are designed to eliminate or reduce government regulations and controls, to promote private sector investment and to improve the management efficiency of public corporations.

The port transport industry has faced particular pressure for change and a great number of countries are currently introducing policy and institutional reform programmes in this sector. The changes take a myriad of forms and a variety of expressions — such as commercialisation, deregulation, corporatisation and privatisation — have been used to describe the process of institutional reform. Within the port transport industry policy reforms have concentrated primarily on changing the ownership structure of the ports, the institutional framework for the provision of port services and the employment practices of dock workers and other employees.

The objective behind the introduction of these reforms are many and varied. In some countries, the UK for example, the decision to privatise the major ports was made largely on ideological grounds and in the belief that private ownership is superior to public sector control. Some governments strongly support the belief that market forces are the most effective way of regulating port capacity and of stimulating business efficiency. In some countries deregulation has been promoted as a means of giving ports greater autonomy from public sector controls whilst many governments are introducing such schemes to improve financial management and accountability, to raise new funds for investment and to reduce the public sector borrowing requirement. These reform programs, however, have one objective in common and that is to improve the management efficiency of the business.

The case for introducing the proposed reforms in India is supported by the belief that the bureaucratic

and mechanistic management culture engendered in the major Indian ports, the extent of central control and planning, and the difficult labour environment have imposed constraints on port administration and had a major negative impact on operating performance. There is no disputing the fact that the major ports in India have gained a reputation for low productivity and high cost operations and that this has resulted in poor utilisation of facilities and resources. Despite improvements in productivity in recent years the major ports do not satisfy the needs of India's external trade and do not participate sufficiently to the provision of the much needed modernisation of the transport sector. Ports have also tended to be treated as public utilities and large social welfare organisations rather than as economic service organisations.

India now needs a more commercially oriented and competitive port management administration with an increase in the level of participation of the private sector to attain better efficiency and to provide new sources of finance to fund port modernisation and expansion schemes. Major reforms are needed if the port industry is to meet the changing economic environment in India, with its increased emphasis on exports, and the introduction of inter-modalism and modern cargo handling methods. The growth of inter-port competition within the Asian region resulting from the introduction of load centering practices in the container trades is another powerful argument to support these reforms. Following the introduction of economic liberalisation measures in 1992, attention has begun to turn to the privatisation of India's ports and this is now a matter of priority for the government. Although there are many obstacles to be overcome, there is now general acceptance that privatisation will enhance competitiveness, effectiveness and reputation of Indian Ports. At issue now is the nature these reforms will take and the extent and pace of change to be introduced.

IV

The case for retaining Indian ports in the public sector is indisputable. The major ports should remain as statutory bodies under government control, but there should be a gradual move away from the *service* to the *landlord* model of port administration where the involvement of the port authority in the provision of essential port services is reduced. Such a policy is seen as part of a broader strategy to reduce the involvement of the public sector in the provision of cargo handling facilities and services and the employment of labour. Although, initially, these changes will affect the provision of cargo handling services, such a policy could ultimately be extended to other port services, although there may be a case for retaining pilotage, conservancy and other statutory obligations as responsibilities for the Port Trust. The greater involvement of the private sector in the provision of port facilities and services will not necessarily reduce the responsibilities of the Port Trusts or diminish the role or stature of their senior executives. It will generate the need for a stricter and more focused regulatory framework and change the nature of the administrative role of port authorities.

As a means of implementing this policy, the Port Trusts should gradually retreat from directly providing the full range of facilities and services to port users, particularly cargo handling operations, and allow more of these to be performed by organisations in the private sector. Cargo handling operations, for example, should be organised within a system of separate competing terminals within each port. Where it is possible, the Port Trusts should be allowed to sub-divide the dock estate into separate and distinct terminals and to lease these to or enter into berth appropriation schemes with competent and experienced private operators who are capable and willing to invest in superstructure and equipment. The present fragmented organisational structure for providing cargo handling services should be replaced and terminal operating companies (formed by stevedoring companies, transport contractors, shipping companies or consortia, and joint ventures, possibly involving the Port Trusts etc) allowed to provide a comprehensive range of services to ship operators and cargo owners. The long term objective must be to establish in the major Indian ports independently managed terminals operating in a genuinely competitive environment.

The greater involvement of private sector companies in port operations should lead to considerable improvements in management performance. The principal economic benefits of this will be:

(a) Reduced cargo handling costs through improvement in labour productivity.

(b) Reduced sea transport costs through the replacement of feeder by main line shipping services.

(c) Savings in ships time in port (service and waiting time). If the performance of India's container

terminals could be brought into line with modest international standards, the savings would be in the order of US $ 100 million per annum.

(d) The avoidance or postponement of some new investment as a result of the additional capacity created by productivity improvements.

Privatising on a large scale the provision of port services will mean that the present functions and role of the major Port Trusts (and the GoI) will inevitably change. The major ports will change from a comprehensive to a landlord status. The new role for the GoI and Port Trusts will be to monitor macro-economic performance indicators on the port system against set targets, only intervening if targets are not met. The GoI and major Port Trusts should be primarily responsible for formulating and implementing development programmes, allowing companies in the private sector to get on with the task of providing port services.

The introduction of greater private sector involvement in the provision of port services must be supported by greater autonomy being given by the GoI to the major ports and by the introduction of organisational reforms designed to change the management culture of Port Trusts. Managers in the Port Trusts must be given realistic financial and performance objectives and greater powers needed to attain these. There must be a relation of the controls on capital expenditure, financial management, commercial and pricing policies, procurement regulations and practices. Greater freedom should also be given to senior managers to set salary levels and to introduce rewards and incentive schemes to attract, retain and motivate staff.

Organisational reforms can not be effective unless they are supported by improvements in management. There is a need to develop effective leadership, team work and accountability in the major Port Trusts. The new port enterprises and the major Port Trusts must put in place modern management organisations that support the adoption of commercial policies and reflect the changes taking place in maritime transport organisations should, ideally, have their own corporate identity and develop a professional and competent staff that seeks to attain technical and commercial excellence. Responsibility and authority must be devolved throughout the organisation so that staff become accountable for their performance. The principle of accountability must be embodied within the organisational structure, establishing clear lines of authority and making employees fully aware of their individual responsibilities. Clear departmental and individual performance targets must be set, against which targets of achievement of individual employees, sections and departments as a whole can be assessed. The management ethos must be developed where individual initiative is rewarded and which promotes management excellence.

A pre-requisite for the successful implementation of the port reforms currently under consideration by the GoI is resolution of the manpower and employment issues and this is another area where major changes are needed. Managing the introduction of employment reforms presents a formidable challenge to senior managers in the major ports and to policy makers in government. Putting in place new and more appropriate conditions of employment and personnel management policies is seen as essential to the success of the reforms and the modernisation of cargo handling operations and to improving Indian port efficiency. Some progress has already been made to reduce the workforce in the major ports, particularly in the Port of Calcutta, to simplify employment practices and to adjust manning levels to modern cargo handling methods. However, a broader and more radical package of reforms needs to be implemented to introduce modern working practices, to change employees attitudes and to improve labour productivity.

If the present fragmented arrangements for providing cargo handling operations is to be replaced with a single terminal operator and by the extension of the practice of berth appropriation schemes, these will need to be supported by changes in the conditions of employment of port and dock workers. The extension of privatisation to cargo handling and other related activities will also have a profound influence on future manpower requirements and methods will need to be found to reduce the size of the workforce in a socially acceptable manner. Of overriding importance, if the principle of unity of command is to be adopted, is the abolition of current distinction between ship and shore labour and its replacement by a system where labour can be deployed to any location within a berth or terminal. This objective is crucial to achieve future improvements in cargo handling efficiency and is relevant irrespective of whether the terminal or berth operator is in the private or public sector, or what management organisational

structure is established. What is undeniable is that this objective will not be achieved if the present fragmented organisation of labour is persisted with.

Institutional and management reforms will have a far greater chance of being successfully introduced if all labour involved in cargo handling operations (ship and shore labour equipment drivers, maintenance technicians, clerical staff, etc) are employed directly by single organization, preferably the operational employer. All operational employers (including the Port Trusts where they provide cargo handling services) should directly employ all managerial, technical, supervisory, clerical and port workers on a permanent basis. However, this arrangement can not be achieved immediately and must be the long term objective. In the interim, arrangements must be put in place to combine the labour force, and this would best be achieved if the major Port Trusts were to directly employ all labour involved in cargo handling operations. This will inevitably mean the demise of the local DLBs which have in the past served a useful purpose but for which there is no strong case for retention. Proposals to merge the DLBs with the Port Trusts have been made in several of the major ports. Mergers have already taken place in Cochin and Calcutta and negotiations are well advanced in the ports of Calcutta and Madras. There are unlikely to be major objections, provided the terms and conditions of employment for registered dock workers who are transferred are comparable to those pertaining in the existing schemes. This would immediately lead to improved efficiency through greater flexibility in the deployment of labour. The management activities of the major Port Trusts and DLBs are closely connected and this should enable smooth transfer of authority and assets to the latter.

The merger of the DLBs with the Port Trust will provide a unified form of employment for all employees engaged in cargo handling work, and should be proceeded by negotiations for the introduction of a package of labour and salary reforms. Permanently employed port labour must be engaged for all cargo handling activities and the practice of using casual or non-registered workers should be stopped immediately.

Negotiating a package of reforms to the conditions of employment for port workers is urgently required, and should be given a very high priority in the GoI's port modernization strategy. Setting appropriate manning levels for all activities is not easy; so the new agreements should provide management with the operational flexibility to adjust manning levels to meet changing conditions. The traditional distinction between categories or grades of employee should be reduced to a minimum and based purely on skill. The new agreements should ensure that all restrictive practices are eleminated, and that working conditions and operating procedures form part of the new contracts of employment. The present wage structure should be rationalized and simplified and incentive schemes changed to reflect new manning levels and responsibilities. Current industrial relations procedures also need to be re-examined and revised.

Initially, it is anticipated that the majority of cargo handling work will be carried out by the major Port Trusts. However, as new terminal operating companies are formed or leasing arrangements are entered into with private contractors, the amount of cargo handling work performed by the Port Trusts will decline, and with it the demand for port labour. These new terminal operating companies should be permitted to engage their own labour force employed on a permanent basis and under new contracts of employment. The new terminal operating companies must be required to give priority to Port Trust staff when engaging labour, but should reserve the right to recruit from outside the port to complete their establishment or to acquire skills not available with existing employees. Care must be taken to ensure that this procedure is not seen as a way back to the casual system of employment, and safeguards must be in place to ensure that labour is not exploited. The long term objective, which is entirely compatible with the aim of transferring the majority of cargo handling activities to independent operators (preferably in the private sector), is to transfer the employment of the majority of port workers from the public into the private sector. This is seen as an important component of the policy to change employee attitudes and to introduce modern management practices. The residual labour force will continue to be employed by the Port Trusts and will be engaged in cargo handling activities at the berths and terminals continued to be operated by them. Port Trust employees may also be engaged by private operators on a temporary basis to meet peak demands for labor.

V

Although there is external pressures and a certain momentum within trade and transport industry circles for institutional reforms, the process appears to have

currently stalled. The GoI and the major Port Trusts have not, as yet, prepared a comprehensive plan for greater private sector involvement in port operations and little progress has been made in the introduction of essential organisational and manpower reforms. It is suggested that the institutional reforms will not be possible without revision of the 1963 Major Port Act. This will require many years to accomplish and a further delay to the implementation of essential reforms will be a serious blow to improving the efficiency of India's seaports. Finding solutions to the current manpower planning, employment and human resource development problems affecting the major Indian ports will also take time to accomplish, but a start must be made as soon as possible.

Given the scale and the uncertainty of the consequences of the policy reforms the GoI is contemplating, it has wisely decided to develop a test case and selected the Jawaharlal Nehru Port Trust (JNPT) for this purpose. In late 1993 the GoI appointed a team of international experts to prepare a set of standard bidding documents for the tendering of the operations of the container terminal at JNPT. A similar set of standard documents were also prepared for a bulk terminal tendering exercise. These documents set out the terms and conditions of the agreement, the selection criteria and the procedures to be adopted in the tendering process. Despite these developments, there is concern that if the GoI permits the reforms to proceed that there is a risk that they will be introduced in a piecemeal and uncoordinated manner. The actions of individual Port Trusts in the past 18 months indicate that there is a lack of clarity amongst senior managers about how the reforms should be introduced and what nature they should take. What is urgently needed is the preparation of a national policy and a set of guidelines which individual ports will be able to apply when introducing the proposed reforms. This should be followed by the preparation, at the individual port level, of strategic plans for the introduction of the complete package of reforms and a workplan for their implementation over, say a ten year period.

As soon as the GoI have formulated a national policy and a set of guidelines for introducing policy reforms, the Port of Calcutta will need to prepare a strategic plan for its implementation. This will present a formidable challenge to senior managers, and one in the outcome of which will determine the prosperity of the port for generations to come.

73. Fork-lift in operation

74. Fork-lift in operation

A REVIEW OF MASTER PLAN ON CALCUTTA DOCK SYSTEM AND HALDIA DOCK COMPLEX

TAKAO HIROTA

Since the opening of the Calcutta Port Trust 125 years ago, the port has made continual progress in line with the development of the country. Calcutta and Haldia ports complex serves the vast hinterland of North and North-Eastern India as well as land-locked countries of Nepal and Bhutan. Population within this area is at least 300 million or over. Given its location, the size of the hinterland and its importance to the development of national economy, the port of Calcutta has been serving as one of the key terminals of water and land transportation in the region.

In order to provide modern facilities necessary to meet the demand for future, a Master Plan was prepared in 1989 by the Overseas Coastal Area Development Institute of Japan (OCDI) through the technical cooperation programs of the Japan International Cooperation Agency (JICA) for the development of Calcutta port. In this Master Plan the long term target year was set to 2005 and the short term urgent plan was made for the year 1995.

Prior to this plan, functions of the ports of Calcutta and Haldia were defined. When the port of Haldia opened for service in 1977, basic concept of Haldia was to provide comparatively deeper water berths for bulk cargoes and industries. Because of the long distance from the sea and the draft constraints of the river Hooghly, the port of Calcutta was assigned mainly as a conventional general cargo port. Haldia was selected for the site for larger vessels because of the shorter distance to the sea and less maintenance dredging requirement.

In Calcutta, the Master Plan recommended rehabilitation and improvement of facilities in and around the dock area including rehabilitation of swing bridge, road pavement, re-alignment of rail road, introduction of cargo handling equipment and specialization of berths. In Haldia, expansion of the container terminal, improvement of coke and other bulk cargo handling yards, upgrading of railway system, etc., were recommended in the short term plan. For the long term, construction of an additional oil jetty, expansion of coal handling plant, mechanization of coke berth, construction of multipurpose terminal, second lock, etc. were recommended. Over the time horizon of the Master Plan, the number of containers conveyed by deep draught vessels was expected to grow rapidly, therefore, Haldia was recommended for the container terminal. Even though the Master Plan did not cover river dredging aspects, navigation system on the river Hooghly was studied and safety measures including traffic control, installation of navigation aids as well as improvement in the pilot system were proposed.

II

According to the Master Plan prepared in 1989, various investment programs have been implemented in both Calcutta and Haldia. At Haldia, the Berth No. 10, a multipurpose berth, has been completed while augmentation of existing container handling terminal is scheduled to be initiated in the year 1996-97. Improvement to telecommunication systems, dismantling of under used quay cranes and procurement of equipment were implemented according to the recommendations in the Master Plan. However, installation and improvement of navigation aid systems recommended in the master Plan are yet to be implemented.

According to the latest port statistics, the total traffic volume of many items at both Calcutta and Haldia in 1994-95 seems to exceed the volume projected in the Master Plan. This is particularly remarkable for exports of industrial products, imports of petroleum and fertilizer and exports and imports of containers. On the other hand, cereal imports, materials for fertilizers,

cement and other finished products fell short of the projection. Importation of cement in 1993-94 was nil against a forecast amount of 150,000 tons in 1994-95.

This is generally the result of the achieved successes in industrialization and self sufficiency of the Indian economy. Particularly, strenuous efforts to increase food production led to an increase of finished fertilizers importation and good harvests have brought a reduction in food imports. When ports are examined individually, traffic handled at Calcutta appears to be higher than originally forecast while the cargo for Haldia seems to be less than forecast.

In the Master Plan, Calcutta was expected to maintain break bulk general cargo operation. At the same time, importation of fuel oil and good was also considered an important function. However, grain imports have significantly declined in recent years. On the other hand, exports of iron, steel and machinery have greatly exceeded the projected volume. Volume of containers handled at Calcutta is growing rapidly and in 1994-95 figures both for export and import seem to exceed more than 150% of the projected volume for the same year.

Haldia was expected to handle a greater number of deep draft vessels carrying liquid and dry bulk cargoes as well as containers. Export of coal through Haldia in 1993-94 was less than the projection. Emergence of Paradip, a major coal loading port of India might have contributed to the fall in traffic from the level projected in the Master Plan. Exports of iron, steel and machinery are observed in Haldia even though none were projected. Number of containers handled at Haldia remains stagnant and fell short of the estimated volume.

This Master Plan was made on the assumption that in the year 2005 the main navigation channel will be improved to minus 10.6 meters at least to Haldia and the land transportation facilities will be duly developed. For the short term target, available water depth at Haldia in 1995 was expected to be 9.3 m against 8.6 m as in 1988-89.

Although capital and maintenance dredging of Hooghly river was outside of the scope of the Master Plan, intensive dredging operation has been continued during this period. As a result, available water depth at Calcutta has been improved to some extent but the depth at Haldia has rather decreased. At Calcutta, river water depth for over 6 m had been available for 349 days in 1990-91 but became available for 360 days in 1993-94, while available days of over 7 m changes from 195 days to 286 days and that of over 8 m 38 days to 104 days. At Haldia, however, depth of water decreased for over 8 m from 350 days in 1990-91 to 323 days in 1993-94, and for over 9.0 m from 112 days to only 37 days. This might be the result of emphasis on the upper stream dredging rather than on the down stream.

Improvement program of road and inland water ways between Calcutta and Haldia was also behind schedule. Commercial transaction is still maintained in Calcutta and shippers prefer to use Calcutta rather than Haldia for general cargo and containers. Some of the container and general cargo traffic has even shifted from Calcutta/Haldia area to Bombay due to inaccessibility of the ports and land communication to the hinterland. During this period, size of container vessels on the main line has grown more than anticipated and a water depth of at least 12 m is required for the normal mother vessels while more than 14 m is required for the over-Panamax vessels. Therefore, those ports with a water depth of less than 10 m have little chance to attract main line full container vessels.

III

According to the recent progress in the Indian economy, over all target of economic indicators in the year 2005 has to be revised upward. With regard to the traffic through the port, the total volume of cargo will certainly surpass the original projection. When compared to the size of the hinterland and its population, cargo volume now going through Calcutta and Haldia will continue to grow for the foreseeable future.

There remain several issues to be considered for the future development of this port complex. The first one is demarcation of function between Calcutta and Haldia. Reassessment of demarcation for the ports of Calcutta and Haldia, particularly allocation of container cargo for both ports is required. Considering the recent trend of sharp growth of containerization and considering the huge potential of general cargo traffic by the containers both for export and import, strategy for development of container terminals in this area has to be urgently reviewed. At the same time, if Calcutta is expected to handle more containers, the land use plan needs to be reviewed around the dock area. Construction of roads and development of appropriate infrastructure are necessary to facilitate smooth flow of container traffic.

Recent trend of vessel size increase in international

shipping, particularly for container vessels, needs careful examination in relation to the international shipping route and location of hub and feeder ports. The main line mother vessels calling only for hub ports in recent years require more than 15 meters of water depth. Even secondary full container liners require a water depth of 12 meters. If a water depth of at least 12 m can be secured at Haldia, there is an advantage to handling containers at Haldia instead of Calcutta. On the other hand, if Calcutta can maintain a 6 m water depth throughout the year, much of the containers with origin and destination in Calcutta will be carried by feeders from other ports to Calcutta directly.

For the maintenance of the currently limited water depth, annual volume of dredging in the navigation channel for the Highly river reaches 20 million cubic meters. This is an extremely large maintenance dredging volume. Of course, considering the nature of Hooghly river with its huge volume of discharge and silt suspension, this volume is understandable. However, when the dredging volume is compared to the volume or value of cargo handled at Calcutta and Haldia port complex, it seems to be excessive against average maintenance efforts in other river ports of the world. If the water depth has to be increased, the volume for maintenance dredging will increase tremendously. Volume and subsequent cost of maintenance seems to be excessive compared to the amount assumed at the time of the Master Plan preparation. By reassessing realistic water depth requirement in both ports in the target year, optimum utilization plan of resources available for dredging should be made. Particularly, strategic allocation of dredging efforts at both the upper and lower stream needs careful examination in order to pursue the best cost performance.

Forecasts on cargo-throughput need careful review. Some areas of critical importance are highlighted. In the first instance, with regard to importation of food, the recent success in agriculture notwithstanding good weather, the decline in food importation is not guaranted. Shortage of food might occur by drought or flood at any time in the future and the ports have to have facilities to accommodate such circumstances. Secondly, one should consider that a review of the volume of crude oil and petroleum products in relation to the total energy consumption in the foreseeable future will be necessary. Provision of pipelines around this area to handle both crude oil and petroleum products including installation of deep water berth at further downstream locations or even outside the estuary of Hooghly should also be considered

Overall economic feasibility including investment cost for land transportation facilities such as highways, railways, telecommunication and improvement of inland waterways facilities needs to be reviewed. This is another area requiring careful examination.

Cargo handling productivity in both ports seems to have room for improvement. Low productivity might be caused by inadequate equipment and other facilities; it might also be caused by institutional and managerial inadequacies. In this connection, effects and prospect of deregulation of Indian government policy will also require careful evaluation in terms of port management, operation system as well as upon industrial development and related issues concerning land transportation and shipping in this area.

IV

These issues need to be studied as early as possible and a new Master Plan should be formulated. The new Master Plan should have a long term target year of 2015 and a short term target year of 2005. In the new Master Plan, particular attention should be paid to :

(a) suitable deployment of port functions (Calcutta and Haldia) in connection with total transport economy, including dredging cost, and if necessary, a suitable location of a new port with its roles and functions,

(b) routes, dimensions and required structures of navigation, and

(c) navigation control system including real-time channel mapping system.

In view of ever increasing international competition and financial constraints of the public sector, the overall port management system, operation system as well as financial aspects have to be also reviewed. Because of limited available funds in the public sector, a large part of which has to be spent for maintenance dredging, a part of development fund required for facilities in the future may be obtained from the private sector. In particular, participation of the private sector in specialized berth operation, introduction of private or foreign capital to cover a part of the necessary development fund need to be examined.

75. Cargo Grouping

76. Pallet Handling with Fork-lift

OPTIONS FOR CALCUTTA PORT TILL 2011 AD

A. Ananthakrishna

Nostalgia and sentiment more often than not cloud rational judgment otherwise dictated by ground realities. They hinder acceptance of obsolescence. The costs associated with modernisation and new development are often cited as reasons to carry on with the existing system with peripheral improvements. This is no doubt partially valid in situations like ours where limited resources have to be delicately balanced against competing demands. However, the benefits lost to the region and country, direct and indirect, in consequence of delayed decision may not be ignored. Shipping is international in character. It may bypass ports which cannot readily cope with the demands made. Such ports end up by being relegated to the background. The port of Calcutta is an example. The Port traffic as a percentage of India's total port traffic has continued to fall from about 20% in 1965-66 to about 10% in 1994-95; though in absolute terms, there has been a near doubling of the traffic.

One often hears of our ancient ports deep inland receiving ships in the days gone by and their sad neglect by the power that be in restoring them to their past glory. In all this rhetoric, the generic term 'ships' is used, rarely if ever pausing to think of the type or size of ships those used these ports. In the absence of road and rail linkage in the past, the waterways were the best and the only means of inland penetration. The natural process of siltation combined with neglect of conservancy measures on the rivers led to the inevitable extinction of these ports. The advance of shipping technology, more than anything else, brought about the decline of such ports.

History is replete with ports being abandoned and this is more true of reverine ports. These processes such as siltation combined with the inexorable march of technology, have compelled the ports to move seaward over the years. The Hooghly estuary is no exception. History recounts the flourishing trade at Tamralipti, Saptagram, Hooghly, etc. in Bengal and they got abandoned over time. The movement of shipping and cargo operations, especially of bulk material from Calcutta to Haldia, is a continuation of this process of seaward movement of the port facilities. Rapid strides in shipping and cargo handling technology and the economies of scale had their own role to play in the above situations; but it is primarily the inability and inadequacy of the existing system at Calcutta to cater to these developments that forced the lighterage and transfer operations, though limited to fair weather, is again a part of this process of movement closer to the sea to cater to the changed and changing shipping scenario. The objective of this paper is to look at the sort of requirements of Calcutta Port in 2011 A.D. and dig up some ideas however impractical these may appear to some.

II

Any speculation on the role of Calcutta Port in 2011 A.D. and the requirement to fulfill the role have not only to look at the changing Indian scene but also the trends elsewhere in servicing sea trade. Even the crystal ball gazing has to keep the past history of the port and the river in the back of mind so that the outcome is tempered by a degree of realism. One need not go into the development of the Calcutta dock systems or the abandonment of the river side jetties in any great detail; but the expectations of the Haldia dock system and its inability to meet fully the needs are issues of considerable importance. Future developments are linked to the possibility of Haldia becoming able to meet the demands effectively and at affordable cost to the port and the trade.

Pre-eminence of Calcutta Port in the fifties and early sixties has already been mentioned. It had handled about 11 million tonnes in 1964-65. It fell to a low of less than 6 million tonnes in the early seventies. Even after the commissioning of the Haldia dock system in 1977 the traffic stood at 10 million tonnes in 84-85. It may be worthwhile to quote from the Project Report (September, 1960) on The Proposed Subsidiary Port at

Haldia in Regard to the Need for the Port Quarter: "A port is as great as its hinterland makes it. What a hinterland ! From the hinterland 40% of the country's imports and 45% of the exports trade flow through this port. The export trade of this port yields 50% of the total foreign exchange earnings of the country. The trade potential is immense. Service to the trade demands removal of the handicaps. The shipping using the port suffers from at present — bends, bores, and bars".

The hinterland of its port did not go anywhere, but the traffic did due to rapid changes in the shipping and cargo handling technology and the inability of the system to meet these changes. An estimate puts the current value of exports and imports through the Calcutta port at 25% and 12% respectively of the total value of the country's exports and imports.

The limitations of the Calcutta dock systems are too well known and need no enunciation. The port was considered a potential bottleneck in India's economy. The permissible length of a ship that can be safely navigated in the bends of the channel above Diamond Harbour was such as to exclude the modern dry and wet bulk carriers resulting in unnecessarily high freight costs. Earlier assessments made by the port's consultants for the Haldia Dock System indicated that even with sustained and increased maintenance dredging, the permissible loaded draft to Calcutta Dock System is unlikely ever to exceed 28 to 29 feet. With the added restriction on the length of vessel mentioned earlier, the Calcutta Dock System was considered to be unsuitable for the bulk cargo vessels operating in the trade. Notwithstanding the upland discharge, which is dependent on the discharge at Farakka Barrage and tends to vary substantially in dry months, the length restrictions on the vessels still remain, though the bars of the upper reaches have stablised to a good extent resulting in reduced requirement of maintenance dredging. The problems have however shifted to the lower reaches whose substantial maintenance dredging is now required. The opening of the Rangafalla Channel since 1987 has provided improved access to Calcutta docks. The access earlier was through Haldia/Balari Channel and this bar which was causing considerable problem was the governing bar for the navigation channel to Calcutta. The opening of the Rangafalla Channel provided drastic improvement in the permissible drafts to Calcutta. The number of days of draft above 7 m increased from 59 days in 1985-86 to 286 in 1993-94. Similarly 7.5 m and above draft was available for 199 days in 1993-94 as against 25 days in 1985-86. Information available however showed a significant fall in the number of days for the above drafts in 1990-91 and a slight fall again in 1992-93. Though this channel has existed for a fairly long period of time in more or less the same general position, it is reported to be subject to rapid and pronounced fluctuation in depth in the past. The increased availability of depths in this channel is proving beneficial to the Calcutta docks, notwithstanding the other limitations mentioned earlier.

An examination of the traffic pattern at Calcutta docks shows that barring POL, which is handled elsewhere, the docks have been handling fertilizer and to some limited extent raw materials for fertilizer and miscellaneous general cargo including containers. Except for a steep decline for almost a decade from 1973-74, the miscellaneous cargo has remained between 3.5 and 4.5 million tonnes per annum. In 1994-95 & 1993-94, these were 3.6 and 3.3 million tonnes respectively. Of this the container traffic accounted for 1.76 and 1.4 million tonns respectively, leaving less than 2 million tonnes of break bulk cargo. In the long term (by 2005) the container traffic, according to an earlier study by the Japan International Cooperation Agency, will benefit by shifting to Haldia. It may be highly desirable to promote such a shift from a variety of reasons, not the least being providing a better environment and quality of life for the population of Calcutta. Such a shift and increasing volumes of containerisation of containerable cargo should release a number of berths in the Calcutta docks which could be put to other uses.

Before examining whether Haldia dock system has served the purpose for which it was set up, it may be worthwhile to recapitulate the main advantages visualised for a port at this location at the time of planning the facility. These were as follows :

(a) There will be no restriction on the length of the ships.

(b) Much better drafts will be obtained for the ships. The aim was to provide access to ships of 35ft to 37ft draft for as many days as possible. If depths could be improved by about 57 feet, ships of 35 feet draft could enter or leave the port for 252 days in a year.

(c) Approach to the port will be free from sharp

bends with only two or three bars to contend with.

(d) Considerable saving in ships turn round time could be effected.

(e) Shifting of bulk cargo from Calcutta will set free for leasing out valuable areas of land kept reserved for extention of the N.S. Docks.

(f) Berths in K.P. dock will be set free for being used as laying up berths for repairs to ships.

Work on Haldia dock system started in 1964 and the oil jetty outside the contemplated dock system was commissioned in 1968 and the dock system with handling shipments started operating in 1977. Even as the facilities were being commissioned, the ore export from Calcutta had started dwindling. It was around 1,000,000 tonnes per annum at Calcutta in the years prior to shifting of the trade in 1977. The export of ore from Haldia suffered a natural death within a couple of years of commissioning of a fully mechanised facility capable of a rated loading capacity of 6000 tonnes per hour in the Haldia docks. There was a sharp increase in the size of the vessels trading in the commodity during the period the facilities at Haldia were being put up and Haldia with a loaded draft of 28 or 30 feet was not a port the buyers were willing to look at. Haldia was not alone in this predicament. In India itself, facilities for handling ore exports at its ports of Madras, Vishakapatnam and Mormugao had to be substantially stepped up to provide access for 60,000 DWT bulk carrier to start with. For retention of the trade, the existing facilities had to be abandoned. It was possible for each facilities to be provided at these ports in an outer harbour or in an extension of the existing harbour. Unfortunately it was not possible at Haldia, being in the estuary, to create and maintain drafts that are required by such vessels referred to earlier. Haldia is a riverine port and thus faces many of the same problems as at Calcutta Port. The ore loading facility was finally modified in 1985 to handle coal.

Even in the case of the coal handling facility, the proximity of the coal fields and more so the limitations at Tuticorin, the port which substantially received the thermal coal loaded from Haldia, have contributed in no small measure to the continuation of traffic in coal at Haldia. The contemplated deepening of Tuticorin port to 10.67 m, the substantially increased quantum of thermal coal that will be needed for power generation in the area, the possible change of linkage of the Bengal-Bihar coal to other users and the feasibility now of import of coal in larger vessels could all contribute to the coal exports also tapening off, unless improved drafts for fully loading the dedicated colliers become available at Haldia in a reasonable time frame.

Even though there is no restriction on the length of the vessel that can call at Haldia (the lock system is no constraint), because of the severe limitations in the permissible draft, the large vessels have to be dead freighted or resort to double port calling with attendant costs therefore. Table-1 gives the maximum DWT of vessel by vessel type and the average or maximum cargo tonnage per vessel in 1987-88.

The limitations imposed as a result of non-availability of the draft in the cargo carrying capacity of vessels calling at Calcutta Port don't need any further explanation. The first full fledged container landing facility to be set up in India in the Haldia dock has remained totally under utilised due to extremely poor infrastructure support to the facility. The reduced tariffs and better facilities at Haldia including a higher draft than at Calcutta have not helped in improving the traffic at Haldia due to poor hinterland links.

An impressive list of international specialists and consultants not only supported the need for a subsidiary port but also its location at Haldia. Shipping technology has undergone tremendous changes since the time the above suggestions were made. It must be said to the credit of at least a couple of them suggested that Calcutta Port should undertake studies for the establishment of a real deep water port in the estuary suitable for ships of 367 ft at 40 ft draft, while recognising that Haldia was the only site where a subsidiary port could be developed in the foreseeable future to meet the immediate requirements. The time needed for making the studies, the none two favourable conditions in the estuary were all recognised while making the suggestion for detailed studies. There is no indication that such studies was undertaken. The thinking, no doubt based on some studies, that the channel to Haldia could be dredged to progressively increase the permissible draft up to 40 ft could perhaps have resulted in concentrating the efforts in this direction instead of undertaking studies lower down in the estuary. Massive dredging operations were undertaken in the early 70s by engaging overseas dredging contractors on the bars in the inner and outer estuary. The permissible drafts after this

dredging, should have improvements, but for a short period. The thinking at the time was that permissible drafts will be increased by dredging by 1 foot every year to reach 40 ft. by 1980. Unfortunately for a number of reasons, this did not materialise. The drafts have been between 8 and 8.5 m for most of the time. The current thinking is a combination of river training works and dredging for attaining increased drafts. The execution of river training works in a tidal estuary is expensive, time consuming and hazardous.

Calcutta port has been receiving a dredging subsidy of 90% of the expenditure involved in maintaining the fairway. These costs are progressively increasing year after year and it is understood that it was of the order of about Rs. 45 crores in 1993-94. Even this expenditure has not helped in improving the drafts substantially. Though there was a substantial increase in the number of days when drafts of 8.5 m and above was available at Haldia from 1990-91. A decline in this is seen from 1992-93. As mentioned elsewhere, substantial volume of dredging is in the approaches to Haldia docks. The question could arise as to whether other options are available or explored to reduce the dredging cost and thereby the subsidy to improve drafts as necessary to enable Calcutta Port to play its legitimate role of the gateway to the whole of Eastern India efficiently.

III

The presumption that a combination of river training works and intensive dredging should improve the depths on the bars in the Hooghly to achieve a draft of 7.9 m for 200 days in a year for Calcutta and 10.7 m for 320 days in a year for Haldia seems to have shifted the focus on studies for moving the port-facilities further down the river towards the sea. Even though the JICA study was to look at the need for a potential deepwater port for Calcutta to meet the future shipping scenario, the study concluded that except for oil (crude) the Haldia dock system should be able to cater to the shipping demands. The ground situation does not support the optimistic projections for improved drafts. It becomes therefore necessary to devote urgent attention to locations down the river and closer to the sea for meeting the demands.

Such a seaward shift is not peculiar to Calcutta. The world over this has been happening. In the Port of London some of the old docks have been abandoned and converted for other uses. The port facilities have moved towards the sea down the river. Other classic examples are the Ports of Rotterdam, New York, Baltimore, Marseilles, Le Havre, Lisbon, etc. In some of these cases, the need to retain their preeminence by catering to larger and larger vessels has dictated the development of facilities at enormous costs closer to the open sea. In other cases, commercial pressures have been instrumental in abandoning old and outdated facilities and moving to newer areas. Port development particularly in developing countries has not been able to keep pace with the changes in shipping and cargo handling technology, because of lack of adequate resources. The need however is there. In the case of Calcutta Port, keeping in view the very large and rich hinterland, the present severe restrictions in the tonnage that a vessel can carry, the costs and time frame involved for improving the drafts adequately (a high degree of uncertainty based on past experience is attached to the realisation of the objectives) and the expectations of the trade, the port has to take a pragmatic look at what it can do and needs to by 2011 to obviate large scale diversion of cargo from its hinterland. Improved hinterland communications, large scale investments by private or joint sector in the infrastructure area, the prospects which seem to have improved somewhat by the tax holiday or investments in the area, could seriously erode the present largely monopolistic situation enjoyed by the port in regard to traffic. Containers do not respect the concept of traditional hinterlands. They will move even to a distant facility if it exists, absorbing a higher inland transportation cost, provided the quality of service is significantly better than at the traditional outlet. A better quality of service could attract a high volume of traffic and consequently regular shipping services.

In the context of increasing size and draft of ships and interminable struggle with the river to improve and maintain such drafts as are dictated by the vessels calling at Haldia even to day, which may reach unsustainable dimensions, the port has to look at seriously the options mooted many years ago. It is recognised that the effect of constructing on the regime of the river, the feasibility of good hinterland connections, the proneness of the area to cyclones and its greater exposure to the monsoon conditions have all to be considered and evaluated in identifying a suitable location for the deep water port seaward of Haldia. While by its nature this may be a long term solution, it should be investigated seriously to see whether this could be brought to fruition in the time frame 2011 AD being considered.

Certain traffic projections had earlier been made by the Asian Development Bank (ADB) and the Perspective Planning Group (PPG) of the Planning Commission upto the year 2000 A.D. Most had made certain projections upto the end of the eighth five year plan (1997-98). All these projections were made well before the opening of the economy and liberalisations by the Government. These projections are given in Table -2.

The provisional figures for 1994-95 (Indian Ports Association) indicate that Calcutta & Haldia handled 5.8 and 14.7 million tonnes of cargo respectively. These are close to projections for the terminal year of the Eighth Plan (1997-98). The container traffic has considerably exceeded the projections in respect of Calcutta (twice the projections of the terminal year of the Eighth Plan) while at Haldia it is so small as to be insignificant. It is apparent from the figures that virtually the entire container traffic is handled at Calcutta Port. It may be worthwhile to examine whether it is in the overall long term interest of the trade.

The JICA study in 1989 made traffic projections till the year 2005. The actual traffic in 1994-95 came very close to the projected medium 1995 figure. A comparison with 1993-94 figures show substantial increase in POL & Crude and Containers. Since POL and Crude are handled in exclusive facilities, one has to take note mainly of the growth in container traffic and other break bulk cargo. With greater percentage of break bulk getting containerised, the annual container growth rate may be sustained. It is interesting to note that the total container traffic in 1994-95 at Haldia and Calcutta is very close to that projected for 1995 by JICA. However there is tremendous imbalance in the traffic at Calcutta and Haldia. The JICA study has shown the need for a second lock in 2005 at Haldia.

One major factor in the assessment of required facilities at Calcutta and Haldia to handle the projected traffic is the assumption of following drafts at Calcutta and Haldia (as indicated by CPT) :

for Calcutta: 7.9 m in 2005 as against the present 7.0 m to 7.5 m

for Haldia : 10.67 m in 2005 as against the present 8.5 m (+)

This crucial factor combined with other things like productivity, turnaround time, etc. will determine the ability of the dock systems to meet the demands made on them. Non-achievement of these drafts will result in reduction of parcel sizes, leading to increased number of vessels to be served for a given annual traffic,waiting time and turn around time. It is quite likely that the annual growth rate in traffic will be higher with higher GDP.Non realisation of drafts indicated will result in deterioration in total annual throughputs with possible diversion of cargo. In 2011, if anything, the situation could worsen if adequate drafts for the fully laden bulk vessels cannot be maintained. The related issue is the physical and financial resources necessary to provide and maintain the drafts. Without sounding unduly pessimistic, one can say that close examination of a site for provision of deepwater facilities does not brook any further delay. At the same time a realistic assessment of maintanable drafts particularly to Haldia should be made.

The other crucial factor is the handling of ever growing container volumes. The earlier referred JICA study has suggested that bigger feeder vessels of 500-1000 TEUs could be received at Haldia with definite cost advantage and the IWT between Calcutta-Haldia could be the most cost effective means of moving the containers. A suggestion made to freeze the container traffic at 1994-95 level (110,000 TEUs) at Calcutta with conscious efforts to make it possible to move the balance to Haldia is worthy of consideration. It will certainly be easier to provide additional facilities at Haldia than at Calcutta. An efficient IWT system will develop if entrepreneurs are certain of the cargo volumes and adequate facilities being provided for the handling of container barges. In the long term, KPD could be redeveloped as an efficient IWT terminal as Calcutta is the focal point for IWT traffic to the North East, East and West (on the Ganga). When the bulk of the cargo and containers get shifted to Haldia and further downstream, the time will be opportune for such redevelopment. In the short term, IWT terminal facilities could be developed in the Garden Reach Jetty area. A further fall out of the shift of cargo downstream could be a significant reduction in traffic congestion in the Calcutta area. Any measure which will reduce the traffic congestion is bound to be warmly welcomed by the citizens of Calcutta.

In the short or medium term, the port is making conscious efforts to offer better services to shipping and trade. The port is installing a VTMs system from Sand Heads to Haldia. Installation of a differential global positioning system (DGPS) is also on the anvil.

The above will offer significant assistance to shipping, survey and dredging. The availability of survey data in the Hooghly river regularly is an essential need to understand the morphological changes in the river and to take corrective actions. The periodical survey data of the outer estuary is essential among other things for the contemplated long term development. The port has to be equipped for undertaking the work on its own or engage agencies to carry out the work. A more rational pilotage system—reducing the pilotage distance, as suggested in the JICA study — could be tried out at least in fair weather period and extend the period based on experience. There have been complaints from the trade and lessees of berths in regard to non-availability of pilots and consequent delay and demurrage to vessels. When the traffic increases as projected with consequent increase in number of vessels, the problem could become acute. It may perhaps be worthwhile to examine possible alternatives keeping in view the safety aspects and complexity of the river.

Yet another issue that could be examined is the possibility of reducing channel widths after the contemplated improvements in the navigation system are in position. In combination with the DGPS, the dredging efficiency could improve and all efforts to reduce the cost of dredging need be taken.

It is rather difficult to visualise the requirements of the port in 2011 AD, but sooner than later it should look at the shortcomings in the services to be provided to the trade dispassionately and initiate appropriate action. Improvement in productivity and turn around time of vessels are essential components of the service to be rendered by the port. A rational distribution of cargo between the Calcutta and Haldia dock systems should be evolved and where necessary resort should be made to offer sufficient increment and exert pressure to effect the redistribution even while the long term solutions discussed earlier are examined. Extensive revamping of equipment and modernisation of facilities by the port are necessary. This is an area which has been sadly neglected and does not brook any delay. Implementing the above under working conditions is rather difficult, but there is hardly any choice if the port wants to handle the traffic offered to it efficiently and in a cost effective manner. If needed, the inefficient facilities should be closed down and new ones established to cater to the traffic. It is recognised that the port may not have sufficient resources of its own or access to funds for the above purpose. It is time the port looks at private or joint investment for implementation of the programme.

The centralised planning system and the trade accustomed to looking to the Government all the time for the improvement or provision of facilities have contributed to a stagnant situation where availability of resources became the sole criterion for development. Non-utilisation of even the allotted plan funds by the port for a variety of reasons also contributed to a situation where forward planning became the main causality. It is time for the port to switch over to the landlord concept and tap private resources for provision of facilities and operating them. The anxiety and apprehension of certain sections of the people in the port arising out of the above policy have to be addressed.

There are no easy or ready made solutions. Unless such investments are encouraged for the modernisation or development works, the port even by 2000 AD will find itself unable to cope with the demands made on it. Till now contrary to the claims made about large investments through private participation, the reality is that there is hardly any in the port infrastructure. Contrary to the popular belief, the private enterprise in India has shown no great inclination in the development and operation of port facilities at least in the major ports. Either due to lack of clarity in the guidelines set out or the unreasonable expectations of the port from the entrepreneurs, there has been no significant progress in private participation in the port sector. Public and private (or joint) participation can pave the way, initially at least, for a meaningful progress in the provision and operation of facilities, provided the port does not place unreasonable demands on the private sector. By 2011 AD one should hope to see the Calcutta Port well on its way to becoming a landlord port. As of now, this appears to be the best possible solution to meet the demands likely to be made on the port.

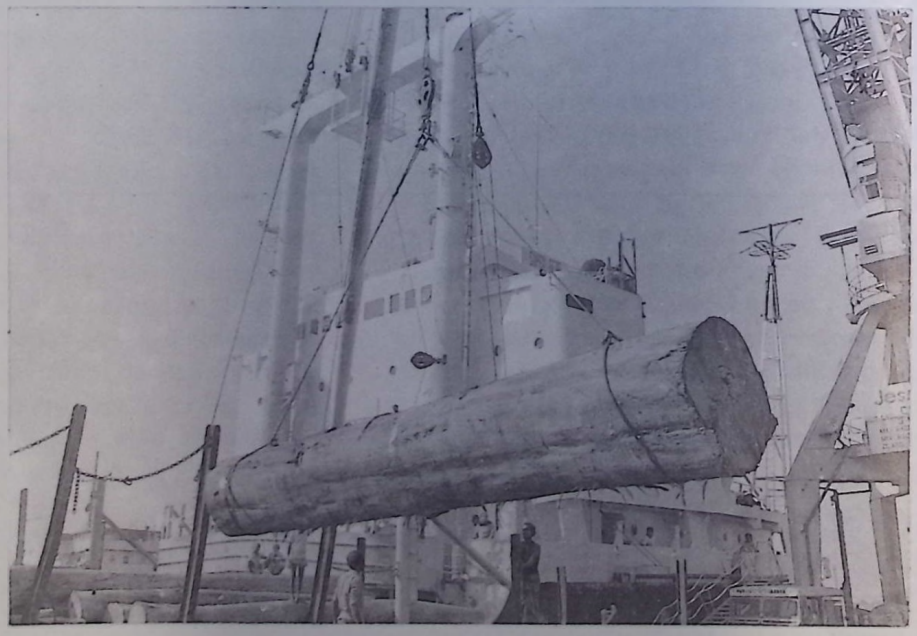
TABLE-1 : VESSEL TYPE, DWT & TONNAGE

SL. NO.	VESSEL TYPE	MAXIMUM DWT	MAXIMUM CARGO TONNAGE	AVERAGE CARGO TONNAGE
i)	Liquid bulk (POL-crude)	89,490	42,367	29,505
ii)	Liquid bulk (POL Products)	67,225	25,565	10,784
iii)	Dry bulk (Coal) - Thermal	47,721	32,792	24,00
iv)	Dry bulk (Fertilizer - Raw materials)	43,124	14,852	9,461
v)	Dry bulk (coking coal)	47,721	23,729	20,542
vi)	Break bulk (General cargo)	30,413	14,010	4,264
vii)	Container	8,000	244 TEOS	

TABLE-2 : PROJECTIONS ON EXPECTED TRAFFIC AT CDS & HDC
(in m. tonnes)

PORT	YEAR	SOURCE	TOTAL TRAFFIC	CONTAINERS
Calcutta	1994-1995	ADB	3.96	0.60
	1994-1995	PPG	4.80	0.90
	Eighth plan	(MOST)	5.77	0.80
	1999-2000	ADB	5.10	1.20
Haldia	1994-1995	ADB	16.61	0.96
	1994-1995	PPG	14.76	0.70
	Eighth plan	(MOST)	14.76	0.60
	1999-2000	ADB	23.16	2.20
	1999-2000	PPG	20.55	1.00

77. Bags in Sling



78. Unloading Logs

TASKS FOR CALCUTTA PORT BEYOND 1995

P.S. Mukhopadhyay

In 1970, the Port of Calcutta completed one hundred years of its life as a statutory body in the manner of a batsman who, on reaching his century in a Test Innings, takes fresh guard to face the bowling in the quest of some more landmark. The air of optimism about its future seemed well-founded. In 1969-70, Calcutta the fourth largest cargo-handling port in the country, had handled 6.9 million tonne of cargo and the future looked bright as modern port facilities, being developed at Haldia, were soon to be added to the resources of Calcutta. Besides, an assured supply of water from the Farakka barrage in the near future would augment the Hooghly waters to provide deeper draft for the vessels. The prevailing mood was reflected in the observation of B.B. Ghosh, one of the thirteen chief executives during first hundred years of the Calcutta Port. The fact is that "this port can look forward to another century of very useful life for the economy of Eastern India" and "it should not be deterred by temporary difficulties or setbacks"

Changes in fortune, some of them profound as well as unexpected, have affected this port during the twenty-five years since 1970. Large areas of port activity have shrunk in the Calcutta Dock System (CDS). Calcutta jetties have been closed to shipping traffic, a major segment of the port railways has become non-functional, and inland vessels wharves have been de-congested in the face of stiff competition from road-cum-rail transport. Cargo which CDS has ceased to handle include important items like coal, iron ore, foodgrains (as a regular item), coastal general cargo and salt. Tea, jute and jute products, hides and skins, and engineering products are being handled in strikingly reduced quantities.

All this has caused a basic change in the activities of CDS, which warrant appreciation along with two other significant developments during this period. Ports at Paradeep and Visakhapatnam have emerged as powerful competitors on the eastern coast. Both have cut into the hinterland of CDS. The Farakka barrage has fallen drastically short of being the promised cornucopia and an alarming decline in the draft of the river Hooghly has followed. CDS has thus been closed to large vessels which have been dominating maritime traffic since the days of the Suez War (1956). To complete the picture, one has to note the absence of a pronounced thrust in economic activity in the hinterland of Calcutta Port during this period. Both public and private investment were inadequate. The region was caught in a drift, so to say, prompting the Chief Minister of West Bengal to declare in the late 1980's that corrective steps should be taken with opportunities for the private sector to participate, if necessary. He further wished that West Bengal must not be allowed to degenerate into "an industrial desert". A port reflects the state of health of its hinterland ; Calcutta has been no exception.

It is true that it has not been an area of unrelieved bleakness. On the positive side, the development and consolidation of container handling facilities at CDS has been a significant gain. Even more important has been the emergence of Haldia Dock Complex (HDC) as the satellite port of Calcutta which is also the hub of a growing regional industrial complex at Haldia-Durgachak. Since 1980-81, the cargo handled at CDS and HDC has more than doubled (from 9.01 to 20.4 million tonne). That HDC has not been able to perform to its full potential is due to the fact that the Haldia channel has not been functional for nearly a decade and it is not known when the situation will improve.

This being the backdrop, the mood in 1995 is tinged with concern for the future of the only riverine port in the country in the midst of burgeoning sea-ports. Jeremiads have been produced, suggesting that Calcutta Port is destined to share the fate of the Port of London, another great riverine port, which closed down in the early 1960's, the Second City of the erstwhile British Empire following its First.

It is, however, possible to avoid joining the band of the mourners and to take a view of the matter in neither sensational nor maudlin ways. There are good reasons

to believe that Calcutta Port can exist usefully in the future by combining the right type of strategy with the requisite management culture. Even now, its strategic advantage is formidable. It is the leading industrial, trade and service centre in Eastern India. Locationally, it is more favourably placed for trading with almost all Asian countries lying to India's east than the other major Indian ports. Among these countries, Bangladesh, Myanmar, Thailand, Singapore, Taiwan, South Korea and Japan deserve specific mention.

Bangladesh, which constituted an important segment of the hinterland of Calcutta Port till 1947, offers particularly good prospects because of the common traditions shared between the two wings of undivided Bengal and also because infrastructural facilities in the two countries can be integrated without difficulty through modification of political intercepts to promote regional trade of mutual benefit. With its entire transport network, Bangladesh can serve as an excellent corridor from Calcutta Port to the north-eastern States of India. It may even be possible to reach out beyond north-eastern India to northern and western Burma by utilising the passage through Bangladesh. In this respect, the SAARC connection should prove beneficial to both the countries. Sea-trade with Thailand, South Korea, Taiwan, Singapore and Japan — countries which are the craddle of the "East Asian Miracle" — can be developed as these industrialised countries are keen on entering the Indian market which is being liberated from barriers that had turned away potential foreign investors. A judiciously selected package of programmes can lift Calcutta Port from its battered state to the status of "India's principal gateway to Southeast Asia".

Privatisation, which implies a shift from public to private management, is the basis of the policy of economic liberalisation which is now being given a trial in West Bengal. There are indications that the prevailing climate in the State has been found good enough to attract substantial private capital in certain areas, which includes Calcutta Port in the near future. Multi-pronged economic activity on a sustained basis will require specialised port facilities. In the changed scenario, the National Government, which has traditionally developed and opened the ports single handedly, has modified its policy to enter into an investment-sharing arrangement with private investors inside and outside India in creating and renovating port infrastructure. Private investment will be channelised to take care of the superstructure and manpower requirements in the selected areas.

Calcutta Port should, however, further explore the areas which have so far been exposed to limited privatisation. As privatisation will be guided by the interplay of diverse economic forces, government intervention to secure promotion of objectives on non-economic consideration through a dosage of subsidies. Social costs, thereby, may be reduced substantially. This change in approach should help Calcutta Port, because it will soon have the advantage of serving the most rapidly growing industrial region in the country.The sheer logic of circumstances will thus compel the Port of Calcutta to be a major actor as privatisation will be under way.

Any strategy about the type of vessels to be handled at Calcutta must take note of the current state of shipping technology and the likely draft availability in the Hooghly. The optimum draft availability in CDS and HDC in 2005 is expected to be 7.9 and 10.67 metres respectively. Bulk carriers, which are very big vessels with broad beams and requiring deeper draft, are thus ruled out in Calcutta Port. The largest vessel that CDS is designed to handle cannot exceed 565 ft. OAL. Draft permitting, HDC can accommodate larger vessels. It has been receiving PANAMAX vessels, 32 m in beam, since 1990 and one SUEZMAX vessel, about 47 m beam, visited it recently. Both CDS and HDC should be able to handle break-bulk carriers of permissible dimensions, along with coastal vessels and container feeder vessels which are somewhat smaller than break-bulk carriers. The emphasis should, therefore, be on containers and coastal traffic. The HDC should, in addition, aim at consolidating and expanding POL handling.

Containerisation has grown phenomenally since the 1970's owing to the development of regional feeder service networks connecting the smaller ports with the main ports served by mainline container vessels. Developing countries have experienced growth in containerisation also because of increase in trade. Considering the trend of the economy, generation of large volume in container traffic in Calcutta is assured and container penetration in all countries that this port will serve is certain to continue. In 1989, long before the days of economic liberalisation, Japan International Cooperation Agency (JICA) estimated the likely container traffic at Calcutta in 2005 at 398,000 TEUs. It also visualised the possibility of direct container service to Haldia.

Considering the trend in container handling at HDC

since 1989, direct container service to HDC in the foreseable future should be discounted and plans should be made to make CDS and HDC useful feeder ports. More berths should be added in the container terminal which has been set up at NSD. Besides, Inland Container Depots (ICD) and Container Freight Stations (CFS) should be brought up both in Calcutta and prominent cargo aggregation centres in its hinterland. An extensive railway and roadway network should be developed to streamline linkage with the port. Studies have indicated the possibility that CDS will not be able to handle the growing container traffic beyond a point. Should that prove correct, steps should be initiated in time to ensure that adequate container handling facilities are provided at HDC to take care of the spill-over traffic. The existing facilities at HDC for container handling should serve as a good launching pad.

Both CDS and HDC should be able to handle a large volume of coastal traffic to and from most of the ports on the eastern and western coasts. Coal, salt, cement, fertiliser and other general cargo should form the corpus of coastal traffic. Liberalisation should lead to the generation of additional traffic in which exports should exceed imports. Industrial ventures in unexplored or inadequately trodden areas should create new types of cargo. Here, the long experience of Calcutta Port handling diverse items of cargo should stand it in good stead. No other port in the country has achieved a comparable measure of cargo versatility. Coastal vessels should have no difficulty in conforming to draft limitations at CDS and HDC. They will, among other things, be able to meet the moderate raw material requirements in chemical based industries which are expected to dot the landscape around CDS and HDC. Coastal vessel terminals are required to be developed at both CDS and HDC to ensure fast turn-round of vessels and increase in port efficiency. Finally, it may be profitable to examine the possibility of the revival of traffic which had to be discontinued as reciprocal cargo could not be generated at Calcutta.

The prospects of increased POL handling at HDC look particularly good. It handled 7.9 million tonne POL (crude and products) in 1994-95 and is yet to reach a saturation point. It has been acommodating tankers upto 60,000 DWT, the governing draft being in the range of 8 to 8.5 m. Larger tankers with greater parcel-loads can be accepted if draft goes upto 10.67 m in 2005, the goal that the port has been pursuing. Even if the capacity of the oil refinery at Haldia is not expanded, the projected establishment by the George Soros group of two oil refineries, each with a capacity of 3 million tonne, will add substantially to HDC's capacity to handle POL. A proposal for the construction of a pipeline linking Haldia with Barauni ensuring the movement of 2 million tonne crude oil from Haldia every year is under examination. Also under examination is the proposal for the construction of a single buoy mooring (SBM) at the Digha High (a point off the coast at Digha with 30 m draft) where giant tankers can be berthed and crude oil can be unloaded through pipelines, like at Vadinar off Kandla. Whether petroleum handling facilities at Budge Budge can be improved needs examination.

Inland Water Transport (IWT) around Calcutta, which used to thrive not very long ago, is in a sad state because of the fierce competition from rail-cum-road transport. IWT is a highly prized resource. One port benefiting handsomely from the exploration of IWT is Rotterdam. It deserves retrial, not merely because it has the virtue of being environment friendly, but also because rail and road transport are already overburdened and are showing signs of strain as a result of increasing demands on them. A study should be undertaken, preferably at the behest of the Planning Commission, to ascertain how best to use the extensive internal water transport facilities in and around Calcutta. There is a good case for the construction of a central IWT terminal at Calcutta which can oversee cargo movement upto Dibrugarh in the east and Allahabad in the west and also link cargo movement with ocean-going vessels.

Draft and structural limitations, which have restricted the operational capabilities of CDS, will be difficult to overcome. An advance planning on the future of Calcutta Port must stress on its spatial expansion towards the south. The renovation of the petroleum wharf at Budge Budge and the creation of general cargo handling facilities there has been suggested. The idea should be examined. Even more important will be expansion of port facilities at HDC towards which tentative steps have been taken. Only one arm of HDC has been developed, more or less fully, so far. The other arm should be developed very soon so as to make HDC ready to receive the spill-over traffic from CDS. A fully developed HDC will be able to accommodate additional traffic which is bound to be generated by the completion of a petro-chemical complex there and the projected establishment of oil refineries in the private sector. Both will trigger off a host of ancillary and subsidiary port-

developed activities. It should be able to provide facilities for ship-building, ship-repairing and ship-breaking. HDC has great potentialities as a catalyst for the development of the industrial region centred at Haldia-Durgachak.

Looking ahead, the creation of an ancillary port at Saugor should also be examined. It will require considerable investment for the creation of infrastructure in and around Saugor. Should the economy of West Bengal be poised for revival, this investment will be a paying proposition. Nearer home at CDS, assets which have been released following the closure of certain activities should be put to alternative uses to generate resources and marketing strategies should be taken up to ensure that the import requirements of the industrial establishments at Durgapur, Bokaro, Jamshedpur, Rourkella and Bhilai move through Calcutta Port. It is in the heartland of the coalfields in the States of West Bengal and Bihar. It should be made the prime port for coal handling for this belt. It should also try to retain the entire traffic of land-locked Nepal.

Mere creation of facilities will be less than fruitful unless these are put to productive use. Only an appropriate management culture can put the breath of life into the framework. Physical changes in the infrastructure must be complemented by matching institutional changes. It should be ensured that (a) the size of the workforce is reduced to make the port financially viable, (b) the right type of cargo-handling equipment matching the new cargo and sophisticated maintenance techniques are available (c) updated information systems are introduced, and (d) the needs of the users are attended to with promptness. The management has to follow a policy ensuring operational and commercial flexibility and delegation of authority to outlying cargo-handling points. Pre-berthing detention time, berth-occupancy and turn-around time must be reduced to the minimum.

In a market where the customer is the king, the quality and price of service rendered will be a factor governing the port-users' choice of port. In this context, the "single window" approach requires immediate adoption at CDS where the port-user is now required to travel to different parts of the city to complete documentation formalities for cargo clearance. Associated agencies, notably the Customs Department, are also required to contribute to the promotion of efficiency in the port. Finally, a HRD package should be developed matching the changed priorities so that a proper work culture is evolved. The State which contributed the expression gherao to the lexicon of industrial relations has to lift the siege, so to say, to ensure a place in the sun under the liberalised firmament.

Calcutta Port was created in 1870 as a part of the infrastructure to facilitate the expansion of British sponsored industrial activities in India. It is a strange legacy of history that the prospect of industrialisation in West Bengal holds the fate of Calcutta Port in the 21st century. At this moment, only a hard-bitten cynic will refuse to see light at the end of the tunnel.

SEAPORTS AND ECONOMIC EFFICIENCY : THE CASE OF CALCUTTA PORT TRUST

C.S. Rangachari

Economists identify efficiency with Pareto optimality which is that state of the economy in which no one can be made better off without anyone else being made worse off. Efficient allocation of resources however requires that its antecedent condition is fulfilled,viz., that least cost production methods are being used and that productive efficiency has been achieved. It can be shown that the loss of welfare from pricing based on inflated costs (i.e. which are higher than the opportunity cost of producing the goods) is considerably higher than that arising from mere pricing above marginal cost which is a form of inefficiency traditionally associated by economists with, for instance, monopoly.

When dealing with an individual firm or industry, such as seaports, rather than with the economy as a whole, it is convenient and useful to focus on productive efficiency. If it can be shown that production is taking place at a cost higher than the minimum (consistent with the constraints), the presence of inefficiency can be taken as established. But rather than take up such a relatively simple exercise, it would be more useful to attempt a systematic explanation of the perceived inefficiencies of seaports. This was attempted through a research study of Indian major ports using the tools of economic reasoning, especially those fashioned by recent theoretical developments collectively known as the new institutional economics, which are particularly handy when analysing organizations

II

Seaports are an interesting (if not *sui generis*) type of economic organization. Ports are often spatial monopolies and take on the aspect of natural monopolies, because of the nature of the fixed investment required and the many facilities technically tied to the harbour. In addition, the services provided by the seaport are of the nature of a congestible goods. The maritime access channels to the seaway, the navigational aids, and the locks and entrances to the port and its berths partake of the nature of public goods. Control of the port approaches to prevent congestion, removal of wrecks, fire-fighting, safety and control of pollution within harbour areas (from oil slicks) are instances of positive externalities.

Not only does the production of the port's output take place under near monopoly conditions but both its product and factor markets tend to fail. One may note that port and dock labour is everywhere unionised in the closed shop tradition while owners of ships that are the port's clients arrange themselves in cartels known as conferences. Each monopoly tends to exploit the other. The labour union manages to close shop taking advantage of the port's monopoly of a captive hinterland. A port which is itself not in competition with others is able to accept lack of competition within the port (i.e. between operators of different terminals which should ideally compete for business).

From an economist's viewpoint, this indeed is a formidable list of departures from efficiency. When we note, further, that seaports are afflicted by information asymmetry and asset specificity, which render the governance structure crucially important, the rudiments of the logic of the public port authority (PRA) become clear. Because of the perceived military and commercial importance of seaports, the state held the comparative advantage in the provision of port facilities and the Trust form of provision of the public good was considered best to involve the user interests as well as the local authorities in the administration of the port. The PRA thus emerged as a form of public governance of ports the world over, though its actual form has differed from country to country depending on the specific historical circumstances of its evolution. But for various reasons this solution of internalisation of externalities through the organizational device of PRA itself generated inefficiencies. Analysis of the model of a seaport briefly sketched below suggests some of the reasons.

III

The seaport as an economic organization can be better understood when studied from the point of view of the individual decisionmakers within the organization who are multiple owners of resources brought together in a contractual coalition. In practice, this is a coalition without a common cause and without a residual claimant. As many as 28 agencies, public and private, may be seen to operate in an Indian port, more or less independently of one another. The business of the port is the business of each of them. The incentives and opportunities, confronting each of the agents, determine their behaviour. This need not endorse the interests, if any, of the seaport as an economic entity or of the national economy. Exchanges among the agents, whether between the government and the port authority, the port authority and the shipowner or the management and the labour, suffer from high transaction costs which the current contracts fail to mediate off.

Not only are key resources of the port such as capital and labour not fully internalised, but internalisation of the market of managerial labour fails. For various reasons, the administrative process (which is intended to replace the market) becomes ineffective. Analysis of the roles of labour, the ship operator, the shipper and the middlemen shows that the stakeholders of the port have in fact staked themselves out on its inefficiency. In consequence, Trust port, while wishing to be non-profit for itself, becomes an extremely profitable enterprise for the various agents involved in its activities. Within such a model port, consonant with its economic agents and their utility maximising behaviour promotes efficiency in delivery of port service as an objective to be left in the public domain and to be captured by particular interests willing to spend resources, not by the port authority. The organization thus fails to maximise efficiency which is the putative goal of a port enterprise.

Some specific refutable implications about the performance of Indian seaports arising from the preceding analysis can be listed as follows :

(a) Because of their monopolistic position and the consequent freedom to raise price, ports owned and managed by public import authorities will be moderately successful in the financial sense but not necessarily efficient in resource use.

(b) Given the agents' maximising behaviour, the working of such ports will favour workers and managers rather than customers and tax payers.

(c) If allowance is made for changes in cargo composition and the influence of technology (e.g. use of improved mechanical aids), labour productivity as well as ship productivity will be maintained at historical levels, as long as factors within the control of labour and management permit this.

(d) Where there is progressive reduction of their numbers by attrition, per person labour productivity will show increase over time with the adoption of new technology.

(e) Total factor productivity, which takes into account the productivity of capital and labour, will tend to decline.

(f) The amount and value of capital in use per workers will increase over time.

(g) Wages and salaries will tend to account for a higher than proportionate share of the increase in value added.

(h) Whenever a wage increase is decided on, the management or port authority will propose a rate revision.

(i) For different reasons labour and management are both interested in expanding port capacity; labour because it would like to protect the old norms of output (and therefore the incentive wages) and management because of prestige reasons.

(j) Consequently, there will be a tendency to increased investment in physical capital at ports.

(k) Conversely, there will be a less strenuous attempt to increase the rate of handling.

(l) Given the process whereby rents are created by artificial scarcity (through the actions of self-seeking agents), and appropriated by labour and/or management (through the bargaining process), capital will not be adequately serviced, i.e. depreciation and interest will not be paid as committed.

(m) This will be reflected in high levels of apparent utilisation of port assets (e.g. berth occupancy) co-existing with low levels of real utilisation (e.g. berth productivity).

For obvious reasons (such as want of data and space constraint), a verification of all the above propositions cannot be attempted here. Nevertheless some pointers can be obtained from a quick look at some figures for the Calcutta Port Trust. The reader can then judge whether and to what extent, the propositions have found their mark in respect of the Calcutta Port Trust.

IV

Financial analysts look at the profitability and asset turnover ratios as important indicators of financial performance. A look at the trend during the last ten years for the Calcutta Port Trust (Table - 1) shows that the relevant ratios have indeed registered good performance. The operating, gross and net, surpluses have all shown significant increase. Key profitability ratios such as the operating ratio and the operating return on capital employed have registered improvement while asset utilisation ratios such as the total asset turnover ratio and the capital asset utilisation ratio have either doubled or trebled during this period. The above trends are impressive. We may now look at the performance of the port in terms of the value added. This is defined as the difference between sales revenue (or operating income) and the cost of bought-in materials and services.

Table 2 gives the comparison of value added and wages for 1992-93 between Calcutta Port Trust and All Ports (including Calcutta Port Trust). This shows that the ratio of wages to value added is 50% higher for CPT than for All Ports. In this table, in the absence of comparable information for CPT and All Ports, the 'value added' was approximated by simply adding together the interest and depreciation actually charged, wages and salaries, overheads and profits.

In Table 3, however, value added for Calcutta Port Trust for 1993-94 is arrived at by the more orthodox method, viz. by deducting the cost of purchased inputs from the sales revenue (i.e. income). Table 3 also shows how the value added has been distributed. 52% of the value added has been distributed as employee cost and 29% has been set aside for the future. One may now look at Table-4 which provides a comparison between CPT and Tuticorin Port Trust in regard to distribution of value added. It shows that Tuticorin, in contrast to Calcutta, has reserved 59% for future replacement/ expansion. The difference mainly arises from the fact that Tuticorin pays only one-third of the value added to the employees while Calcutta pays over half of it. It is obvious that the employees of CPT are kept happy in the short run at the cost of the long term interests of the port which should include such things as future expansion. The rate at which the future is discounted must be high in CPT.

This is apparent from the fact that the Calcutta Dock System (excluding Haldia) itself needs Rs.263.45 crores for replacement at current costs, but the cumulative provision for depreciation as on 31/3/94 is only Rs.89.35 crores, leaving arrears of replacement funds to the extent of Rs.174.13 crores. The loans due as on March 31, 1994 are Rs. 525 crores. It is clear that all reserves and depreciation are not sufficient even to pay back the loans. In these circumstances it is debatable whether the present levels of employee compensation are justified. In particular, the so called productivity linked bonus payment seems to be at the cost of the future — employees pocket the gains from mechanisation and capital equipment without providing funds for replacement, which is sometimes called capital erosion.

Table 5 shows that while the cargo handled per employee reveals clear improvement because of the sharper fall in the numbers employed in CPT over the period, there is evidence of greater capital deepening in CPT compared to All Ports. Also while the cargo handled per rupee invested is constant for All Ports, it has registered a sharp dip in CPT. This seems to validate the last two comments of the previous paragraph

The high wage cost at CPT, even within the island of prosperity that is the class of port employees in India, is too conspicuous to escape notice. One-third of all ports' expenditure by way of employee cost for Class I and II officers and one-fourth of that on Class III & IV staff are incurred by CPT with just 12% of all ports' cargo throughput. If we consider only the performance of Calcutta Dock System by excluding the figures for Haldia from Tables 2 & 5, the comparison of Calcutta with all ports will look more dismal since Haldia receives twice the cargo handled at Calcutta and employees only one-sixth of its numbers. Other caveats to be entered are that the net worth figures in Table 1 may be suspect because of the capitalisation of debt and that, in Table 2, if defaulted repayments of interest and principal are taken into account, the value added figures for CPT will look even less impressive.

V

At this stage it is useful to place a distinction between the financial and economic performance of a port in its proper perspective. The profitability of a port is not the true index of its efficiency. Since port service is an intermediate product and its cost is reflected ultimately in the generalised cost of transport of goods traded by sea, the true test of efficiency of any port is whether it is able to contribute minimally to such total cost of transport to the user, i.e. exporter or importer of the cargo. The total cost of transport to the importer/exporter, to the extent it is influenced by the port's performance, can be analytically viewed in terms of model shown in Table 6. A detailed numbers exercise is not taken up here with reference to Table 6. However, a calculation showed that by reducing the waiting time and the idle time at berth by one-half there could be a saving in the cost of ship's time at port to the extent of Rs. 21 crores at Calcutta on the basis of 1991 figures.

The fact is that Calcutta (including Haldia) has the highest operating cost per tonne of cargo of any major port in the country and it has held this dubious distinction for a long time. It may be noted that compared to the newer ports (e.g. Paradip or Mangalore), with their high capital and debt servicing costs, the older ports such as Calcutta, with their asset values more or less fully written down, should have a lower, not higher, operating cost.

A high level of profits, such as the one CPT is experiencing now, only means that the port charges (item 2 of Table 6) are substantially more than the costs incurred by the port which, in this case, are themselves inordinately high due to various reasons not all of them within the port's control. Such profits can only be at the cost of the importer/exporter, with their inevitable effect on the competitiveness of the country's trade passing through the port. It is in recognition of this fact that in countries like Sweden and Israel, a cap is officially placed on the rate of profits that can be earned by a port authority.

That reasonable returns must be earned on its investments by the port in order to cover the opportunity cost of funds borrowed from government and elsewhere and to provide for replacement of capital assets is not disputed. However, from the economic point of view the port's profits must accrue from cost reduction and increased productivity of assets rather than from increased tariffs. Thus, not only what profits have been earned by the port but also how these have been earned becomes an important issue. A cursory study of the sources and application of funds in CPT would show accruals of surpluses from high demurrage and rental incomes which are clearly not a reward for efficiency, and from investment outside the port in government bonds (instead of in replacement and modernisation), which are not in the interests of the exporter/importer of cargo.

The large profits by the port during 1993-94 are due also to the sharp increase across the board (by 22%) in port charges realised on the larger cargo throughput. Much of the additional revenue earning throughput was in containers. A study by the World Bank showed that the import through port cost to users in Calcutta port is higher by $54 per container or 11% higher than in Madras; for export, the cost is higher at Calcutta than at Jawaharlal Nehru Port Trust (JNPT) by $42 or 11%. This gives some idea of the port's contribution to total transport cost in terms of Table-6.

VI

The seaports the world over, it is the practice to monitor a number of physical performance indicators of output, productivity and service as these can help approximate the extent to which performance is improving in the direction of the economic efficiency and effectiveness objectives. In the ship-to-shore cargo handling system the rate of throughput is measured in terms of the average ship day output which is a measure of the working efficiency at berth and which can be seen as a function of (a) labour productivity per unit of time and (b) the proportion of productively used time in the total available time. Both use of time and the elements which make up the labour productivity measure are variables subject to discretionary control.

The constancy in average shipday output, in the presence of other positive trends, requires explanation. A study of the trends in output for different ports over a period of time suggests that two exogenous factors influence the rate of output, namely, the change in cargo size and composition and the rate of change in the size of the labour force. Where these are constant, the discretionary factors mentioned above come into play. The first factor would have relevance where, as in Madras, more and more cargoes are semi-mechanically handled at general cargo berths with little or no direct labour participation. Given such a trend, the berth productivity rates will show a steady rate of increase. The second factor, viz. change in the size of the labour force, clearly operates in Calcutta. In ports like Calcutta

excess manning logically followed measures taken decades ago to regularise or decasualise employment under the Port Trust as well as the Dock Labour Board. Where there is a steady annual attrition in the numbers employed due to retirement etc., the resultant vacancies not being filled over the years as a result of the perception of excess manpower, the number of gang shifts engaged has to decline, the gang size being rigidly fixed. Since by assumption there has been excess labour from the beginning, presumably the available cargo (assuming it to be constant) is handled without difficulty by the remaining reduced labour force constituted into fewer gang-shifts. In such event, clearly there will be an increase in the average output per gangshift which in turn should result in increase in the average ship berthday output.

In Calcutta even the steep drop in labour strength between 1983-94 has been accompanied by a decline in average shipday output of breakbulk vessels as shown in Table 7(A) & 7(B). While there has been a slight drop in breakbulk cargo traffic, the indicators of labour productivity show marginal improvement. Given this, the decline in average shipday output can partly be ascribed to the use of time and poor resource deployment overall. Any increase in efficiency at work (measured by the output per ship day at work) is neutralised by the increased idle time at berth. The number of hooks worked simultaneously per ship has not increased and, due perhaps to absenteeism, the number of manshifts employed also has come down. (These figures are not exhibited). There is thus reason to believe that labour fell back on the only method available to them to extend work in the face of heavy odds.

Not only the institutional features of an inherited system of labour allocation and use, but the technical and physical features of the Calcutta Port System impose a great disadvantage in terms of capital cost which, in order to make the operations remunerative, has to be loaded on the user in the form of port charges. The port has the highest income per tonne of cargo handled, one may note. The channel depths are such that only the smaller ships can be handled at the Calcutta Dock System and the resultant higher cost per tonne has to be carried by the trade. The operating ratio is close to 75% (brought down from 92% six years ago only by hiking the port charges substantially). The operating ratio is likely to be more adverse for the Calcutta Dock System.

The problems of Calcutta Port arise then from both its physical and institutional features. The port is still carrying the cross of abuses committed in earlier years. The excesses of manpower have contributed to the high operating cost, while the various restrictive practices and other institutional rigidities have contributed to keeping the output low. Administrative overheads at 25% are unaffordably high. Extraneous factors have not helped. Traffic calling at the port, which is its lifeblood, has steadily dwindled. It has either shied away or been diverted to other ports (offering lower costs and faster handling) leading to high unit cost and low unit productivity at Calcutta. Unlike in the case of Bombay where the addition of Nhava Sheva has shown what competition can do even in this country, Haldia has to carry the millstone of Calcutta sharing their combined adversity.

The stevedore, who uses dock labour at Calcutta because they must, has to pay the Dock Labour Board (DLB) a levy at 492% of the basic wage. Even with a levy of this order the DLB is unable to make both ends meet. Both the Port Trust and DLB are obviously exploiting their monopolistic position to the hilt. It is not surprising that a strongly unionised labour tries to follow suit. The economic cost which is a sum of the costs borne by government (which owns the port and, among other things, bears the entire annual cost of dredging needed to keep the port functional), the ship operator and the trade, is high.

What this article has tried to do, in a brief space, is to raise some limited issues concerning the economic viability of the CPT. Whether the two dock systems of the port can help to play the port's economic role i.e. resources and market more effectively through a better division of labour, is a much larger issue. Apart from study of the resource use in the port, obviously a detailed origin-and-destination study of the cargoes consigned through the two dock systems would be needed before one can comment on such issues.

TABLE - 1 : CALCUTTA PORT TRUST : OPERATING RESULTS

I	PROFITABILITY RATIO	1984-85	1988-89	1992-93
1.	Operating income (Rs. Cr.)	98.87	206.48	307.21
2.	Operating expenditure	77.50	152.42	237.17
3.	Operating ratio [(2)/(1) x 100]	78.38%	73.82%	77.20%
4.	Gross surplus (Rs. Cr.)	16.90	39.70	44.68
5.	Total assets (Gross block) (Rs. Cr.)	392.97	442.05	598.04
6.	Gross surplus/total assets (4/5 x 100)	4.3%	9.0%	7.8%
7.	Operatting surplus (Rs. Cr.)	34.80	54.06	70.04
8.	Capital employed (Net capital assets) (Rs. Cr.)	253.08	239.89	266.42
9.	Operating return on Capital employed [(7)/(8) x 100]	13.8%	22.5%	26.3%
10.	Net Surplus (4+Interest payment-F&M income) (Rs. Cr.)	14.80	27.87	29.88
11.	Net worth (Rs. Cr.)	98.68	205.66	442.07
12.	Return on own money [(10)/(11) x 100]	15%	13.5%	6.7%
II	**ASSET UTILISATION RATIO**			
13.	Total asset turnover ratio [(1)/(5) x 100]	25.4%	46.7%	51.3%
14.	Capital asset utilisation ratio [(1)/(8) x 100]	39%	86%	112%
15.	Net worth to total assets [(11)/(5) x 100]	25%	46.5%	144%

Note : Financial & Miscellaneous

(Source : Annual Administration Reports of CPT and Statistical Profiles published by Indian Ports Association

TABLE -2 : VALUE ADDED AND WAGE BILL : CPT AND ALL PORTS (1992-93)

	PARAMETERS	CPT	ALL PORTS
1.	Interest paid (Rs. Cr.)	13.45	81.39
2.	Depereciation charged (Rs. Cr.)	8.64	239.56
3.	Profits (Rs. Cr.)	36.77	296.05
4.	Wages (Rs. Cr.)	157.39	607.58
5.	Overheads (Rs. Cr.)	42.13	226.96
6.	Gross surplus (Approximate value added) (1+2+3=4+5)	258.38	1451.54
7.	Wages/value added (4/6)	0.60	0.41
8.	Number of employees	22,575	97,311
9.	Value added per employee (Rs.)	114,489	149,166
10.	Wages per employee (Rs.)	69,718	63,466

Source : Annual Administration Reports of CPT and Statistical Profiles published by Indian Ports Association. (IPA)

TABLE -3 : VALUE ADDED STATEMENT : CALCUTTA PORT TRUST

		1993-94
1.	Operating Income	382.07
2.	F & M Income	31.13
3.	Total income (1+2)	413.20
4.	Cost of purchased inputs	118.61
5.	Value added (V.A.) (3-4)	294.59
6.	Disposition of V.A.	
	i) Employee cost	152.32
		(52%)
	ii) Financing ccost	55.57
	(Interest on borrowings)	(19%)
	iii) Provision for future	
	a) Depreciation	9.81
		(3%)
	b) Retained earnings	76.89
		(26%)
		294.59

Source : Annual Administration Reports of CPT and Statistical Profiles published by Indian Ports Association. (IPA)

TABLE -4 : DISPOSITTION OF VALIE ADDED : CPT AND TUTICORIN

		CPT (1993-94)	TUTICORIN (1992-93)
1.	Employee cost	52%	33.6%
2.	Financing cost	19%	7.6%
3.	Provision for future		
	a) Depreciation	3%	6.6%
	b) Retained earnings	26%	52.3%

Source : Annual Administration Reports of CPT and Statistical Profiles published by Indian Ports Association. (IPA)

TABLE -5 : UNIT PRODUCTIVITY OF LABOUR AND CAPITAL

	1984-85		1992-93	
	CPT	All Ports	CPT	All Ports
Cargo handled per employee (tonnes)	321	960	761	1620
Capital input per employee (Rs.)	120,740	143,110	265,000	359,270
Cargo handled per Re. Invested (tonnes)	026	067	027	048

Source : Computed from Annual Administration Reports of CPT and Statistical Profiles published by Indian Ports Association.

TABLE -6 : TOTAL COST AT PORT : A NOTIONAL BREAK-UP

1)	Cost of ship's time at port	Rs.
	(Ship turnaround time and waiting time) x (Standing cost of ship per unit of time)	xxx
2)	Port dues and other charges leived by the port	xxx
3)	Cost of cargo dwell time at port	xxx

TABLE -7A : CARGO HANDLING PERFORMANCE : CALCUTTA DOCK SYSTEM

	BREAK BULK VESSELS					ALL TYPES OF VESSELS			
Year	Total cargo handled ('000 tons)	Average ship berthday output (tons)	Average output/ hook shift (tons)	% age of idle to total time at berth (days)	Average turn-round time (days)	Total cargo handled ('000 tons)	Average ship berthday output (tons)	% age of idle to total total time	Average turn round time (days)
1983-84	1994	407	71.3	40%	13.4	3946	487	42%	14.3
1986-87	2253	403	83.1	41%	14.4	3581	490	40%	11.4
1989-90	2185	399	-	50%	15.3	4012	571	48%	12.0
1993-94	1899	399	80.4	51%	14.2	5169	777	40%	10.4

TABLE -7B : USE OF TIME : CALCUTTA DOCK SYSTEM

	BREAKBULK VESSELS			ALL TYPES OF VESSELS		
	1983-84	1989-90	1993-94	1983-84	1989-90	1993-94
1) Tons per ship day at work	678	816	1087	853	1124	1560
2) Tons per ship day at berth	407 (60%)	399 (49%)	532 (49%)	487 (57%)	571 (51%)	898 (58%)
3) Tons perr ship day at port	304 (45%)	381 (46%)	426 (40%)	343 (40%)	539 (49%)	674 (43%)

Note : Figures within brackets are percentages of tons per ship day at work (i.e. net to gross productivity)

Source : Port Trust Annual Administration Reports and data published by Ministry of Surface Transport (Directorate of Transport Research), Planning Commission & Indian Ports Association.

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LEGAL SYSTEM AT CALCUTTA PORT

A.C. Kayal

A Port is responsible for the safety of ships and goods at their custody. The emphasis is not on deployment of armed forces or the property, but to cover the commercial issues under the prevailing legal system. This is necessary for the growth of international business transactions. Ports and Harbours are regulated substantively by various Statutes including bye-laws as also the delegated legislations. The Calcutta Port was initially regulated by the Calcutta Port Act, 1890. The Act was amended from time to time and finally repealed and consolidated by the Indian Ports Act, 1908. The Parliament thereafter passed the Major Port Trusts Act, 1963. Initially this Act was not given effect to three Major Ports of Calcutta, Bombay and Madras. By amendment in 1974 the Ports of Bombay, Calcutta and Madras were brought under the purview of the Major Port Trusts Act, 1963 repealing the earlier Acts.

The Merchant Shipping Act, 1958 is another important legislation in this regard. The origin of Merchant Shipping Act, 1958 can be traced from the Bombay Coasting Vessels Act of 1838. Although several attempts were taken to revive the law relating to Merchant Shipping but for various reasons including lack of legislative competence relative to Merchant Shipping, the ports of India were guided by the Merchant Shipping Act, 1894 of the United Kingdom till 1923. In that year, the Indian Merchant Shipping Act, 1923 was passed, which consolidated about 21 existing Indian Acts on the subject. After Independence, this Act of 1923 extended to other acceeding states. However, in 1947 the Control of Shipping Act was passed as a short term measure. The Merchant Shipping Act was passed in 1958, which is now the principal statute relating to Merchant Shipping.

The evolution of the Calcutta Port has proceeded through the passing of the Acts of 1866, 1869, 1870, 1871, 1872, 1879, 1880, 1881, 1885, 1887 and 1890. The rights and duties of the then Commissioners have been defined and altered gradually through these Acts. In slow measures, the broadening of the base of the Port Trust, from the principle of exclusive nomination by the Government to include members ex-officio and members elected from the bodies representing the mercantile community, has proceeded along with expansion of power and responsibilities. Nevertheless, the overarching governmental control has persisted. The application of the Major Port Trusts Act, 1963 to the Calcutta Port in 1974 has not altered the situation. Attention to the express terms of statutory provisions demanded, possibly to the necessity of review of their operational results.

Decidedly, the cultural roots are British in origin. The observations of Sir Joseph G. Broodbank on governmental control of the Port of London reveal a familiar scenario. He observed as follows :

"The Board of Trade appear through Act as the controlling Government department. They are to be found in thirty four of the sixty three Sections of Act. They appoint the first Chairman and determine his salary and appoint half of the first Board. No money can be raised without their consent or any stock issued. They fix the rate to be charged and act as arbitrators in all disputes with traders, or on questions of compensation to staff. Their sanction is required for the acquisition of land. They are the channel by which the Authority apply to Parliament for provisional orders. At the beginning of the year they study what the Authority is going to do and at the year's end they review what has been done. They can adjust the electorate to suit their own ideas of what sort of an Authority is wanted. Having been the parent of the Bill, the Act leaves them in a position of critic, judge and friend. With such a constitution, the word 'authority' is a misnomer. In actual unfettered power no authority in England can have less freedom and more limitations and yet liberty and elasticity are two of the most important governing principles of commercial success. Theoretically, therefore, the port Authority is in leading strings."

Replace Port of London (Consolidation) Act by the Major Port Trusts Act of India and the Board of Trade

by the Ministry of Surface Transport and the picture of the Calcutta Port is near identical.

A major change has been effected in the composition of Board by the Major Port Trusts Act. In the Calcutta Port Act there were, at one stage, nineteen Commissioners, of whom eleven members were elected from various bodies representing mercantile interest and eight were ex-officio Commissioners representing various Government Departments. In the current statute, out of twenty two Trustees, only six represent mercantile & trade interests and sixteen Trustees hold office ex-officio, being Government Officers or are nominated by the Ministry. Naturally, repeated reference to the Ministry for directions has become the cultural norm. The Commissioners, who should be expected to function at the practical workings of the Port, recommend only sundry policy decisions and that too to the Government for approval by remaining within the laid terms of the statute.

The ambit of activities of Calcutta Port and the governing laws there upon are indeed varied. Some examples may clarify the position of the port. As soon as any vessel touches Sandhead, it is deemed to be within the teritory of Calcutta Port. Under the statute, all facilities are to be provided for such vessels while it is inside the teritory of the Port for safe anchorage and proper facilities for loading and unloading. To perform such activities, the Calcutta Port has several docks, jetties, etc. In all such places, facilities are to be ensured including supply of labourers. The supply of labour has been entrusted to a sister concern, i.e., the Dock Labour Board. The port has its own railway network in arrangement with the Indian Railways, a separate organisation. Both require interface management.

Port has to maintain all the installations and establishments and also to provide ship repairing facilities and for updating the same. This demands a large organisation. Calcutta Port owns a vast land under a perpetual lease from the Government. Innumerable lessees and tenants are occupying and using a large part of such land. As a necessity, various other statutes not connected with merchant shipping or navigation are enforceable in this regard and the managers of Calcutta Port are required to be alert about their implications. Over and above all these there are the problems governing employer-employee relationship. In that area various labour legislations are applicable. It is also necessary to note that inspite of being constituted under a Central legislation, the port is subject to Article 12 of the Constitution. It brings Calcutta Port to writ-jurisdiction of the High Court. The goods transported through Calcutta Port also attracts other legislation like Customs Act. In short, the ambit of legal responsibilities is wide and complex.

To summarise, the major domains of legal responsibilities are as follows :

(a) Maintenance of proper navigation, all facilities for safe stay and all necessary amenities as required under statutes;

(b) Guidance of proper navigation through navigable channels in the river Hooghly and safe anchorage in the river as well as in the dock;

(c) Granting proper facilities for all vessels engaged in loading and unloading of goods;

(d) Manage the land properties including keeping proper relationship with lessees and tenants;

(e) Look after the relationship between employer and employee;

(f) Manage and administer the railway system of the Port according to Railway laws consonant with the terms of contract with the Railways.

(g) Examine and draft the contracts with third parties/contractors for jobs done through them.

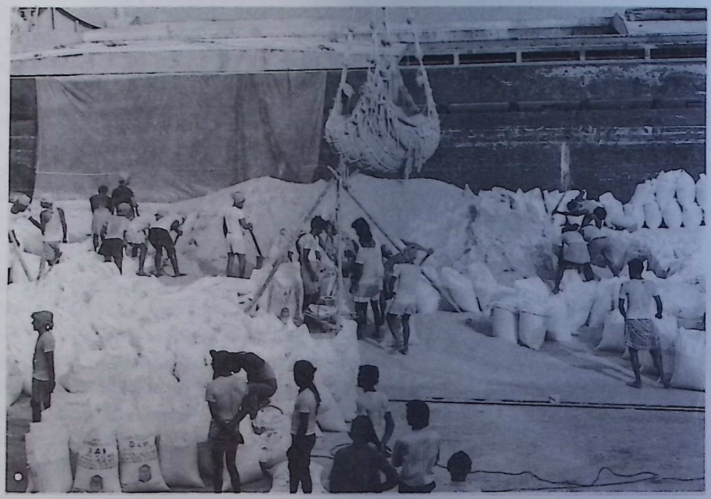
(h) Have an overall supervision over all legal aspects to ensure that steps are taken lawfully by all responsible managers and that the rights of the Calcutta Port are lawfully and effectively preserved.

Such a wide and varigated domain of law can touch any manager of the port while performing his specialised tasks. He has to take decisions on the instant considerations of port operation. In doing so, he may transcend his legal limitations and can involve the port as an institution in protracted litigation. One may not expect every officer of the port be well conversant with all the intricacies of legal domains. At the same time, the port cannot prevent the aggrieved seeking justice in the courts of law. Innumerable litigations thus confront the Port, the contentions of which range between writ petitions, civil suits and disputes in personnel matters. These happen in addition to the cases of arbitration between contractors and the port. The processes are protracted, wasteful and expensive. It is time that legal processes are simplified.

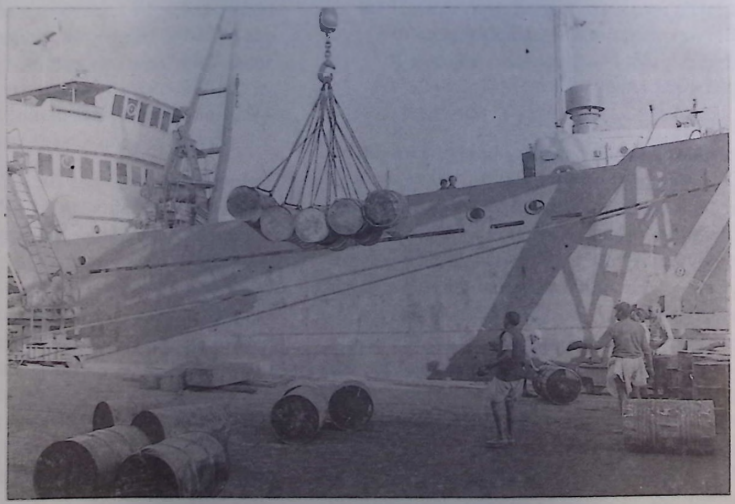
It is injudicious to expect for full redemption of the mistakes that a specialised professional manager may commit from faulty judgement even when the legal processes are simplified. The manager has to appreciate the meaning of justiciability of evidence before he takes action. He needs training to develop such a faculty. Such a training has not been institutionalised within the Port of Calcutta. Consequently, there is little appreciation that the Legal Department can be seen as a friendly resource or that this resource can be friendly only through endorsement of the culture of helping relationship. Such a culture is yet to take roots. Cases do turn up at the desk of the Legal Adviser only after the contentions have hardened up. Before the judiciary, sometime marshalling of witnesses do not happen. Hence appeals mount upon the cases at the lower courts. There is no reason to believe that the legal department is superior to any other functional department of the port. All departments are cogs in a wheel, which will turn smoothly only when the cogs are in tune. To establish this as a basic premise, there obviously is the need for training.

Within the ambit of democracy, there exists no absolute authority. Even when the Government under Section 52 of the Major Port Trust Act fixes the rates of use of land and buildings belonging to the port, such revisions have been challenged by tenants. The rates for use of port services determined by the Government under Sections 48 and 49 of the same Act have also been challenged by some users. Even when under Section 24 the Chairman of the Trust is seen as the appointing authority, his orders of dismissal of officers holding the post of Head of Department have been challenged in the Court of law. There is no limit on interpretation of the rights of individuals in a democracy. This is, however, only one side of the story.

The legal department is also lagging behind in establishing proper machinery to enforce some of the statues. This is particularly true with regard to the Public Premises (Eviction of Unauthorised Occupants) Act, 1971. This lacunae may be traced into the very set up of the legal department, which is presently headed by a Legal Adviser appointed on deputation from the State Judicial Department. He may not be conversant with all aspects of jurisprudence that confronts a port. It is time that attention is given to the issues mentioned. The alternative is to incur unexpected expenses and thereby cause drain on the resources of the port.



79. Bagging and Sling Operation



80. Cargo in Drums

FINANCE AT THE PORT OF CALCUTTA

B. Sengupta, U. R. Saha & S. Sett

Calcutta Port as an autonomous institution made a humble beginning in 1870. It has remained viable as a self-financing body over the last 125 years. The regional economy that this port has served had undergone many changes, some of which are radical in nature. The economy did not flourish consistently; there were the ups and downs commensurate with the fluctuations of international business cycles. At the same time, investments on developing port infrastructure have been made by investing own funds or through borrowing. These had to surviced.

Some of the highlights of the ports performance as reflected in the financial records are worth mentioning. For the first 28 years, the port secured a net surplus. Then for two years, there were operational losses. This was followed by a period of net surplus covering some 12 years. During the First World War, the port once again faced operational losses. Between 1916 and 1929, the years of surplus more or less matched the years of deficit. Then came a period of eight years for the port to suffer losses. It enjoyed a short period of surplus till the Second World War pushed it back to deficit. After the end of this war, things improved till 1965. Then for the next nine years, the port incurred losses. After 1975, the port, on the whole, earned surpluses. The details are given in Table-1 placed at the end of this paper.

The point to note is that this port has earned surplus in 86 financial years out of 125 such. Such a performance may not be described as dismal. What may be worrying is the high proportion of income earned per tonne of cargo being used as expenditure. This ratio is increasing.

II

The Calcutta Port Trust (CPT) follows conventional technics of budgeting. The greatest difficulty faced by it is forecasting cargo through-put. The budget is revised at the middle of the year in the light of measured reality during the past period. The difficulty in adopting Zero Based Budget (ZBB) is given by the fact that historical cost, current trends of cargo and vessels, the scale of rates of services rendered to the users and predetermined income & expenditure forms a major corpus of the total budget. Application of ZBB is thereby restricted and limited. At every level, the budget and the actual performance is analysed. The reasons of deviation or shortfall, if any, are identified. Then suitable corrective measures are adopted to reach the objective. Calcutta Port pays special attention to performance budgeting. An abridged structure of balance sheet of Calcutta Port Trust (last 5 years), shown in Table-2, exhibits the major sources of funds and its applications.

Capital reserves represent the Port's own fund built over a period of 125 years and invested in capital assets and accordingly not available for other purpose. The balance of capital reserves account is annually adjusted by way of transfer from some portion of revenue surplus towards provision for future financing for plan and non-plan expenditure as well as grants-in-aid received from the national Government from time to time for financing the plan expenditure. Some portion of revenue surplus and other provisions are kept aside for some specific purpose and reflected under the "Reserve and Surplus" head. Calcutta Port Trust has borrowed fund from various sources, viz., the national government (as budgetary support), inter-port loan, commercial loan from the foreign banks as well as debenture loan from the public. These are clubbed together as capital debts.

Major portion of the fund has been applied for creation of fixed assets of the port. The CPT has also made some investments for the purpose of repayment of debenture loan on due dates. Moreover, a substantial amount has been applied to meet the needs of working capital.

Return on Capital Employed provides a test of profitability related to the Net Capital Employed represented by Net Fixed Assets together with Net Current Assets. The higher the percentage the more efficient is the capital employed. This is shown in Table-

3. It reveals that during the period 1989-90 to 1992-93, the net surplus remained more or less same, inspite of increase of capital employed. In the financial year 1993-94, net surplus showed a distinct rise.

The relationship between borrowed funds (Capital Debt) and own capital (Capital Reserve) is a popular measure of the long term financial solvency of a firm. This ratio indicates the relative proportions of debt and equity in financing the assets of an organisation. A high ratio shows a large share of financing by borrowed means in relation to the owners fund. It creates higher debt servicing obligation and greater claim against the net assets. This is shown in Table-4.

One may conclude from this table that Calcutta Port has been steadily improving its debt equity position. This is due to freezing of interest loan from National Government and steady repayment of outstanding capital debts. It is expected that debt servicing charges would become less burdensome in future.

A low operating ratio is by and large a test of operational efficiency. CPT's operating ratio is higher in comparison to all Major Ports as shown in Table-5. It was only in 1993-94 that there was a steep fall in the operating ratio of CPT due to considerable increase of income and marginal increase of expenditure.

The average operating ratio of CPT during the period 1989-90 to 1992-93 was 75.82% whereas the All India Major Port's Average operating ratio (including CPT) was 67.95% for the same period i.e. almost 8% more. One of the main reasons is that CPT is over staffed in comparison to other Major Ports. On 31.12.93 CPT employed 22.42% of total manpower in the Major Ports while it handles about 12% of the total cargo of All Major Ports. This is shown in Table - 6. In 1993-94, the operating ratio came down to 66.03%, mainly due to higher handling of cargo and increae in the scale of rates. However, with the recent wage revision the balance is likely to be adverse.

CPT is currently following a policy of need based minimum recruitment. In 1989-90, 60% of operating expenses was on account of salary and wages plus fringe benefits. In 1993-94, it is about 49%. Reduction in the number of employees has resulted in increase in number of pensioners and pension payment. The total employees payment plus retirement benefits is steadily increasing from Rs. 114.52 cr. in 1989-90 to Rs. 164.82 cr. in 1993-94. Management cannot control this expenditure and so opportunities for reduction of cost is quite limited. Till date the CPT has not received its assured share from the National Renewal Fund earmarked for restructuring the national economy.

III

The Calcutta Port Trust has a detailed 'Scale of Rates' on the different charges for diverse services and facilities offered to its users. Port charges have been broadly categorised as under (a) charges on cargo at Docks, Jetty & Inland Vessels wharves, (b) charges on vessels and (c) charges levied under authority of India Port Act 1908 (Act XIV of 1908).

The present procedure of rate fixation depends on the following factors as (a) historical cost of various facilities created (Fixed Assets), (b) operating cost for providing the services and facilities, (c) proportional overhead cost.

While fixing the total cost, it is necessary to keep in mind the following factors like (a) a cost that the cargo can bear, because unreasonable high cost may compel the exporters/importers to restrict their activities at a given port, (b) a remunerative rate to attract cargo, otherwise it may be diverted to nearby ports and (c) a rate competitive with the nearby ports.

In spite of all these factors, a given port cannot on its own generate cargo. It is the hinterland that generates cargo. Stagnation of industrial growth in Eastern India has restricted the growth of cargo at CPT. Then there are the two upcoming new ports at Paradip and Vishakhapatnam as competitors

There are wide variations in rates and charges in the different ports. For example, wharfage rate per tonne of edible oil was Rs. 5.80 at Bombay, Rs. 19.46 at Calcutta and Rs. 8.80 at Kandla. Similarly, wharfage rate per ton of cement was Rs. 3.50 at Bombay, Rs. 2.11 at Calcutta, Rs. 11.88 at Madras and Rs. 4.95 at Kandla. Perfect uniformity on rates in different ports might not be possible as situations differ between ports. There are differences in maintenance of shipping channels caused by local factors. The difference in the type or quality of service provided between ports may also define the reality.

Like other expenditure on operation, maintenance and administration, the provision for depreciation on the basis of historical cost had been introduced since

1969-70 as an item of expenditure. As depreciation is an important element of the costs of activities, an allocation of the total depreciation charge on historical cost basis over principal activities was found necessary in order to ascertain the costs of such activities. Appropriate accounts are maintained in the cost centre ledger, under the revised scheme of classification, for recording the depreciation charge relating to the principal activities of the Port Trust. In the annual Revenue Account of the Port Trust, the full amount of depreciation relating to a principal activity, calculated on historical cost basis, is being included in the cost of that principal activity (including Management and Central Administration expenses) to arrive at the net operating surplus for the year.

In addition to depreciation on historical cost basis, depreciation on replacement cost basis is also being worked out for CDS to ascertain the actual cost of the services. However, no exercise for ascertaining the current replacement value has been introduced in HDC till date. Original cost, current replacement values of capital assets (excluding W.I.P.) and Depreciation of Calcutta Dock System for the last 5 years are given in Table-7.

IV

The Calcutta Port Trust has a vast estate under it. The size of this estate can be appreciated from Table-8. In Table-9 an attempt has been made to assess efficiency in estate management. It is encouraging to note that estate earnings are increasing in both Haldia and Calcutta. However, expenses for estate management is also increasing at a substantial rate.

A portion of the estate in Calcutta is under unauthorised occupation. Effort to evict those occupants has not been effective. This is unfortunate, because proper utilisation of the vast estate can yield rich dividends. Most of the estate in Calcutta has become prime land in the course of history. Income can be increased if these are put under more remunerative land use.

Such an option is not, however, easy to implement; this may lead to a national debate as to whether land acquired earlier by the Port of Calcutta for a specific purpose could be used for some other purposes. The deposed owners may challenge such changes in usage. They may wish to get back their land on the ground that the declared public purpose at the time of acquisition of land by the government from private owners is being changed. They may also wish to be admitted as partners of the CPT in this new venture. After all, real estate business can be a lucrative proposition in the event of natural rise of land prices. This is an issue that confronts all public sector units which got their estates through acquisition of land by government to serve a specific public interest. The CPT is a lessee and may not , therefore, act like an absolute proprietor. It has to operate within the legalities of lease and that too with the concurrence of the lessor. That calls for intimate collaboration between the lessee and the lessor.

The lessor in this case is the government. Under the Town & Country Planning Act, 1976, the Government can recommend changes in land use only in manner deemed to be compatible with the Master Plan for the region. This will need collaboration with the Calcutta Metropolitan Development Authority for changing land use for the estate related to the Calcutta Dock System (CDS) and with the Haldia Development Authority for the estate related to the Haldia Dock Complex (HDC). All these can be expectedly resolved if the CPT does some homework. This homework may not involve generating only one time income through sale. Emphasis may be put on generating steady income from rent and services.

The first step in this regard could be the eviction of unauthorised occupiers or encroaches in the CPT's estates. The next important step would involve preparing a comprehensive land use plan to secure compatibility with the Master Plans prepared by other competent institutions under the Town & Country Planning Act. Then only detailed project planning may proceed with accent on securing developmental funds from the relevant stake holders.

An example may be given in this regard. The railway activity is a loosing sector in CDS. It has been incurring operational loss over a number of years as the cost of maintaining the track and the locomotive is steadily increasing. Most of the railway assets having already out lived their economic life; replacement at a huge cost requires a fresh evaluation and new investment decisions. Should the available surplus assets be sold to generate fund and applied in more profitable areas ? Or are there any alternatives ?

With the ever growing population in Calcutta and

its suburbs a need for rapid transit facility to the heart of Calcutta has emerged. CPT can play an effective role if the railway facilities existing at CDS be utilised in a fruitful manner for such a purpose. This may be done as a joint venture, the railways collaborating with the CPT with or without subsidy from the government. This is one instance on the need for planning.

V

Internal resource can be augmented in many different ways, amongst which cost reduction is basically within the control of the ports. Reduction of cost can be achieved either by reducing the operating cost or by discontinuing the economically unviable activities or by attaining higher productivity thereby distributing the fixed cost. Reduction of operating cost by attaining higher productivity requires adopting new technology and use of sofisticated machinery. This in turn means investments. Discontinuation of economically unviable activities is one option, but requires a cautious approach as this may prove to be counter productive to overall earnings.

To increase income, CPT has certain other options before it. Increase of cargo throughput, enhancement of the scale of rates of various activities provided to the users and widening of income base are some such opportunities that the Port should explore. These are, however, not easy to secure. The limitations of the above options are often difficult to overcome. CPT cannot generate cargo on its own and has to depend on the market forces on which it has particularly no control. The scale of rates cannot be enhanced at will. The rates have to be competitive with nearby major ports, failing which cargo may be diverted to these ports. The third option open to CPT is to widen the income base. Such areas may be estate development, undertaking sub-contracting for utilization of idle capacity, joint venture programmes in suitable areas for commercial use of existing facility through diversification of activities. It should be noted that these plans and progammes require investment of substantial funds. As mobilization of additional fund is a constraint, private participation or joint venture on mutually acceptable terms and conditions of operation of some facilities may be considered.

As a means for mobilisation of internal resources, reduction of debt servicing liabilities appear useful. One has to think of restructuring capital. Financial health of many Major Ports has necessitated reformation of their capital structure. Calcutta, Paradwip and Nava Seva Ports have a huge debt burden. Unless some remedial measures are taken forthwith, the financial health is likely to detoriate and cause concern of its very existence. Capitalised debt charges and debt servicing charges have escalated to an astronomical height. Repayment of capital debt and interest thereof will threaten all opportunities for generating surplus, erode liquidity and restrain generation of internal resources. All these will conceivably curtail all future expansion and development plans. Infrastructural bottlenecks will emerge, to hamper port operation as such.

The following options may be evaluated to restructure capital base of ports :

(a) Exhibit true and fair view of the Balance Sheet by incorporating fair value of assets after adjustment of capitalised debt charges.

(b) Assessment of accurate operation cost.

(c) Accelerating the Internal Resource Moblisation exercise.

(d) Waver of interest charges on capitalised debt.

(e) Freezing of interest on borrowed capital.

(f) Repayment of capital debt over a long period.

(g) Injection of funds through soft Term Loans for the on-going projects.

(h) Allowing disinvestments of holding.

(i) Private participation in vulnerable areas.

(j) Maintenance of National Waterways by a separate corporation so that the ports, specially CPT, not suffer on account of natural processes of silting in the navigational channels.

There are reasons to believe that the public sector units have failed to emerge as cost effective business firms. The contributory factors were not all within the control of the public sector units. Nevertheless, these may be held guilty of having endorsed without protest the culture of the polity to treat these units as social-service organisations. Low labour productivity is just one pointer in this regard. To day there is no option other than practising these units as business firms. It is in this context that privatisation in the ports had been initially advocated in the Seventh Five Year Plan and certain areas for privatisation were identified. These

are the captive berths for user industries like fertiliser, power, coal, iron & steel and oil. Then there are the ship repair facilities and floating dry docks. Container Terminals at selected major ports are the other potential areas of privatisation. Construction of berths allowing private investors to operate under the overall control of the port is also an option. Acquisition and lease of sophisticated equipment may not prove altogether ineffective in this regard.

The Major Port Trust Act' 1963 provides in Sec.42(i) that the Board shall have power to undertake the services of landing, shipping goods between vessels and wharves and the Board with the previous sanction of the Central Government may authorise any person to perform this service on such terms and conditions as may be agreed upon. Thus a major port by itself can not privatise the cargo handling operation without getting the approval of Central Government.

Assuming that the Central Government would approve proposals for privatisation, the critical responsibility shall still vest on the proposing port. It has to invite private sector only on lease terms, because out-right sale of any individual facility in an integrated dock system is operationally infeasible. No berth, for example, can hope to operate unless the shipping channels are maintained and the navigational aids are kept operative. Therefore, the port should consider whether costs incurred on these general facilities should be levied *pro rata* on the private party wishing to take on lease terms any part of the dock system. Considering that the CPT has already invested large sums of money in developing these supporting facilities, either by borrowing or from its internal resources, one should consider whether the debt-servicing charges or interests on capital could be incorporated within the lease terms. Resolution of all these issues cannot come unless decisions are taken on some of the relevant issues raised earlier in the context of restructuring the base of capital structure.

The following areas of privatisations have nevertheless been considered by CPT:

(a) 26 KPD given to TISCO as preferential berth,

(b) 9 KPD given to Everest as preferential berth,

(c) MOU for leasing 4 KPD to Supra Marketing - pending Govt.'s approval,

(d) MOU signed with SAIL for berth No. 5 at HDC,

(e) MOU signed with TISCO for Berth No. 8 at HDC,

(f) Mou signed with HIL for a ship repair berth at HDC,

(g) Handed over NSD Dry Docks No. 1&2 to C.S.B.L., and

(h) Maintenance of container handling equipment, Tractor-Trailer combinations and RTG Cranes by manufacturers and their authorised agents.

TABLE - I : A BRIEF RETROSPECTION ON FINANCIAL PERFORMANCE OF CALCUTTA PORT TRUST : 1870-1994

Financial Years	Net Income	Net Expenditure	Net Sruplus (+) Deficcit (-)	Total Cargo Handled	Unit Income	Unit Cost
	(Rs. in lakhs)	(Rs. in lakhs)	(Rs. in lakhs)	(Rs. in thousand MTT)	(Rs. per Mt)	(Rs. per MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1870-71	2.74	0.99	(+) 1.75	3276	0.08	0.03
1871-72	6.50	2.97	(+) 3.53	3411	0.19	0.09
1872-73	5.41	4.70	(+) 0.71	3353	0.16	0.14
1873-74	11.46	7.82	(+) 3.64	3334	0.34	0.23
1874-75	12.52	9.35	(+) 3.17	3291	0.38	0.40
1875-76	13.78	10.29	(+) 3.49	3284	0.42	0.31
1876-77	15.73	11.32	(+) 4.41	3988	0.40	0.28
1877-78	19.03	12.15	(+) 6.88	4746	0.40	0.26
1878-79	18.58	11.68	(+) 6.90	3490	0.53	0.33
1879-80	19.99	13.71	(+) 6.28	3438	0.58	0.40
1880-81	18.59	12.97	(+) 5.62	3847	0.48	0.34
1881-82	19.24	13.64	(+) 5.60	3982	0.48	0.34
1882-83	20.87	14.59	(+) 6.28	4191	0.50	0.35
1883-84	21.17	15.16	(+) 6.01	4114	0.51	0.37
1884-85	21.47	15.64	(+) 5.83	3622	0.59	0.43
1885-86	21.58	15.95	(+) 5.63	3800	0.57	0.42
1886-87	22.97	16.48	(+) 6.49	4051	0.57	0.40
1887-88	31.78	23.37	(+) 8.41	4139	0.77	0.56
1889-89	30.70	22.22	(+) 8.48	4150	0.74	0.54
1889-90	31.67	22.70	(+) 8.97	4147	0.76	0.55
1890-91	33.33	23.23	(+) 10.10	4187	0.80	0.55
1891-92	32.22	22.97	(+) 9.25	4397	0.73	0.52
1892-93	34.10	25.74	(+) 8.36	4279	0.80	0.60
1893-94	43.47	40.35	(+) 3.12	4254	1.02	0.95
1894-95	45.45	38.32	(+) 7.13	4418	1.03	0.87
1895-96	49.30	45.15	(+) 4.15	4449	1.11	1.02
1896-97	54.01	53.84	(+) 0.17	4531	1.19	1.18
1897-98	61.85	61.05	(+) 0.80	4938	1.25	1.23
1898-99	62.33	65.31	(-) 2.98	4709	1.32	1.38
1899-00	66.51	66.53	(-) 0.02	4587	1.45	1.45
1900-01	73.67	70.68	(+) 2.99	5535	1.33	1.28
1901-02	76.61	73.55	(+) 3.06	5495	1.39	1.34
1902-03	77.27	72.70	(+) 4.57	5395	1.43	1.35
1903-04	79.76	76.76	(+) 3.00	6009	1.33	1.28
1904-05	89.97	82.56	(+) 7.41	7125	1.20	1.16
1905-06	89.55	86.65	(+) 2.90	7394	1.21	1.16
1906-07	100.09	98.91	(+) 1.18	8285	1.21	1.19
1907-08	109.57	107.84	(+) 1.73	8596	1.27	1.25
1908-09	119.31	117.28	(+) 2.03	8297	1.43	1.41
1909-10	122.30	119.26	(+) 3.04	8298	1.47	1.43
1910-11	128.26	128.23	(+) 0.03	9025	1.42	1.41
1911-12	135.90	133.38	(+) 2.52	9408	1.44	1.42

Contd.

TABLE - I : A BRIEF RETROSPECTION ON FINANCIAL PERFORMANCE OF CALCUTTA PORT TRUST : 1870-1994 (CONTD.)

Financial Years	Net Income (Rs. in lakhs)	Net Expenditure (Rs. in lakhs)	Net Sruplus (+) Deficcit (-) (Rs. in lakhs)	Total Cargo Handled (Rs. in thousand MTT)	Unit Income (Rs. per Mt)	Unit Cost (Rs. per MT)
1912-13	142.46	147.00	(-) 4.54	10100	1.41	1.46
1913-14	151.28	156.61	(-) 5.33	9600	1.58	1.63
1914-15	144.50	155.39	(-) 10.89	8031	1.80	1.93
1915-16	159.35	149.07	(+) 10.20	6822	2.33	2.18
1916-17	157.23	156.32	(+) 0.91	7109	2.21	2.20
1917-18	158.39	156.29	(+) 2.10	5161	3.07	3.03
1918-19	190.59	184.14	(+) 6.45	5970	3.19	3.08
1919-20	223.56	225.52	(-) 1.96	7977	2.80	2.83
1920-21	266.08	251.61	(+) 14.47	10235	2.60	2.46
1921-22	219.17	240.40	(-) 21.23	7371	2.97	3.26
1922-23	264.76	261.47	(+) 3.29	6809	3.89	3.84
1923-24	260.89	262.06	(-) 1.17	7437	3.51	3.52
1924-25	278.23	280.94	(-) 2.71	7954	3.50	3.53
1925-26	321.28	315.44	(+) 5.84	8550	3.76	3.69
1926-27	312.02	311.79	(+) 0.23	9364	3.33	3.32
1927-28	338.87	339.65	(-) 0.78	10601	3.20	3.21
1928-29	341.83	321.02	(+) 20.81	11010	3.10	2.92
1929-30	343.98	365.42	(-) 21.44	11041	3.12	3.31
1930-31	283.73	334.74	(-) 51.01	8865	3.20	3.78
1931-32	267.02	313.44	(-) 46.42	8054	3.32	3.89
1932-33	246.37	253.65	(-) 7.28	7625	3.23	3.33
1933-34	288.30	297.42	(-) 9.12	7699	3.74	3.86
1934-35	306.20	318.03	(-) 11.83	8508	3.60	3.74
1935-36	300.28	319.34	(-) 19.06	8360	3.59	3.82
1936-37	310.34	311.90	(-) 0.66	8677	3.58	3.57
1937-38	323.86	318.40	(+) 5.46	9079	3.57	3.51
1938-39	316.72	312.00	(+) 4.72	9341	3.39	3.34
1939-40	355.94	330.80	(+) 25.14	10122	3.52	3.27
1940-41	307.89	307.02	(+) 0.87	7869	3.91	3.90
1941-42	348.75	331.11	(+) 17.64	7884	4.42	4.19
1942-43	266.74	327.68	(-) 60.94	3682	7.24	9.90
1943-44	562.97	443.18	(+) 119.79	5629	10.00	7.87
1944-45	703.16	569.50	(+) 133.66	9191	7.65	6.20
1945-46	642.57	637.21	(+) 5.36	11053	5.81	5.76
1946-47	508.27	545.66	(-) 37.39	6564	7.74	8.31
1947-48	655.00	612.00	(+) 43.00	7059	9.28	8.67
1948-49	758.00	656.00	(+) 102.00	8294	9.14	7.91
1949-50	769.00	725.00	(+) 44.00	8916	8.62	8.13
1950-51	692.00	744.00	(-) 52.00	7532	9.19	9.88
1951-52	787.00	814.00	(-) 27.00	9737	8.08	8.36
1952-53	868.00	831.00	(+) 37.00	9828	8.83	8.46
1953-54	878.00	900.00	(-) 22.00	8188	10.72	10.99
1954-55	883.00	921.00	(-) 38.00	7939	11.12	11.60
1955-56	997.00	934.00	(+) 63.00	8160	12.22	11.45

Contd.

TABLE - I : A BRIEF RETROSPECTION ON FINANCIAL PERFORMANCE OF CALCUTTA PORT TRUST : 1870-1994 (CONTD.)

Financial Years	Net Income (Rs. in lakhs)	Net Expenditure (Rs. in lakhs)	Net Sruplus (+) Deficcit (-) (Rs. in lakhs)	Total Cargo Handled (Rs. in thousand MTT)	Unit Income (Rs. per Mt)	Unit Cost (Rs. per MT)
1956-57	1087.00	960.00	(+) 127.00	9012	12.06	10.65
1957-58	1276.00	1119.00	(+) 157.00	10319	12.37	10.84
1958-59	1296.00	1248.00	(+) 48.00	9346	13.87	13.35
1959-60	1297.00	1271.00	(+) 26.00	9784	13.26	12.99
1960-61	1412.00	1362.00	(+) 50.00	9501	14.86	14.34
1961-62	1506.00	1423.00	(+) 83.00	9302	16.19	15.30
1962-63	1697.00	1645.00	(+) 52.00	10203	16.46	16.12
1963-64	1772.00	1719.00	(+) 53.00	10938	16.20	15.72
1964-65	1839.00	1834.00	(+) 5.00	11063	16.62	16.58
1965-66	1856.00	2030.00	(-) 174.00	9848	18.85	20.61
1966-67	2045.00	2357.00	(-) 312.00	10104	20.24	23.33
1967-68	2435.00	2535.00	(-) 100.00	8992	27.08	28.19
1968-69	2347.00	2730.00	(-) 383.00	7955	29.50	34.32
1969-70	2824.00	3283.00	(-) 459.00	6886	41.01	47.68
1970-71	2656.00	3265.00	(-) 609.00	6014	44.16	54.29
1971-72	3506.00	3625.00	(-) 119.00	7359	47.64	49.26
1972-73	3217.00	3962.00	(-) 745.00	6680	48.16	59.31
1973-74	3095.00	4298.00	(-)1203.00	6325	48.93	67.95
1974-75	4214.00	4826.00	(-) 612.00	7536	55.92	64.04
1975-76	5568.00	5401.00	(+) 167.00	7699	72.32	70.15
1976-77	5916.00	5564.00	(+) 352.00	8018	73.78	69.39
1977-78	5933.00	6506.00	(-) 573.00	7549	78.59	86.18
1978-79	7146.00	7466.00	(-) 320.00	7979	89.56	93.57
1979-80	9620.00	8639.00	(+) 981.00	8555	112.45	100.98
1980-81	10164.00	9837.00	(+) 327.00	9290	109.41	105.89
1981-82	11448.00	10832.00	(+) 616.00	9750	148.18	111.10
1982-83	13174.00	11985.00	(+)1189.00	10492	125.56	114.23
1983-84	11841.00	12158.00	(-) 317.00	10278	115.21	118.29
1984-85	15461.00	13771.00	(+)1690.00	10316	149.87	133.49
1985-86	14653.00	14845.00	(-) 192.00	11868	123.47	125.08
1986-87	16795.00	15657.00	(+)1138.00	11847	141.77	132.16
1987-88	16759.00	18063.00	(-)1304.00	12791	131.02	141.22
1988-89	22799.00	18829.00	(+)3970.00	13989	162.97	134.60
1989-90	24736.00	19891.00	(+)4845.00	14447	171.22	137.68
1990-91	27092.00	22142.00	(+)4950.00	14953	181.18	148.11
1991-92	30214.00	25736.00	(+)4478.00	16000	188.83	160.85
1992-93	33546.00	29078.00	(+)4468.00	18337	182.94	158.57
1993-94	41318.00	33630.00	(+)7688.00	18496	223.38	181.82

TABLE - 2: BUDGET OF THE CALCUTTA PORT TRUST : 1980- 90 TO 1993-94

(Rs. in crores)

Sources of Fund	1993-94	1992-93	1991-92	1990-91	1989-90
Captial Reserve	439.39	376.82	333.23	281.99	229.10
Reserves and Surplus	96.66	65.27	49.79	40.30	31.65
Capital Debts	525.23	547.20	522.96	501.96	467.03
Total	1,061.28	989.29	905.98	824.25	727.78

(Rs. in crores)

Application of Fund	1993-94	1992-93	1991-92	1990-91	1989-90
Net Fixed Assets	822.00	805.11	730.94	652.03	598.54
Investment	10.61	10.31	10.18	10.06	9.62
Net Current Assets (Working Capital)	228.67	173.87	164.86	162.16	119.62
Total	1,061.28	989.29	905.98	824.25	727.78

TABLE - 3: RETURN ON CAPITAL EMPLOYED

(Rs. in crores)

	1993-94	1992-93	1991-92	1990-91	1989-90
Net Surplus (A)	76.89	44.68	44.77	49.50	48.45
Capital Employed (B)	555.63	447.45	431.77	286.28	248.31
Return on Capital Employed (A ÷ B%)	13.84%	9.99%	10.37%	17.29%	19.51%

TABLE - 4: DEBT EQUITY RATIO IN CALCUTTA PORT

(Rs. in crores)

	1993-94	1992-93	1991-92	1990-91	1989-90
Capital Debt	525.23	547.20	522.96	501.96	467.03
Capital Reserve	439.39	376.82	333.23	281.99	229.10
% of Cap. Debt. To Cap. Reserve	119.54%	145.21%	156.94%	178.01%	203.85%

TABLE - 5: OPERATING RETIO AT CALCUTTA PORT

(Rs. in crores)

	1993-94	1992-93	1991-92	1990-91	1989-90
Operating Income	382.07	307.21	256.62	244.33	223.58
Operating Expenditure	252.29	237.17	202.01	179.45	165.32
Opt. Ratio of CPT % of Opt. Exp. To Opt. Income	66.03%	77.20%	78.72%	73.44%	73.94%
Opt.. Ratio of Major Ports	N.A.	66%	70.81%	67.6%	67.4%

TABLE - 6: ITEMS OF EXPENSES AT CALCUTTA PORT

(Rs. in crores)

	1993-94	1992-93	1991-92	1990-91	1989-90
Salaries & Wages (Rs.)	110.85	107.16	97.34	93.25	90.32
Fringe benefits (Rs.)	13.03	13.08	10.61	13.92	8.73
Total Establishment Expenses (A) (Rs.)	123.88	120.24	107.95	107.17	99.05
% of Establishment Expenses to Operating Expenses (Rs.)	49.10%	50.70%	53.44%	59.72%	59.91%
Expenses on Retirement benefits (B) (Rs.)	40.94	32.86	21.52	20.23	15.47
Total Establishment Expenses including that on retirement benefits (A+B=C) (Rs.)	164.82	153.10	129.47	127.40	114.52
Gross Expenses (D) (Rs.)	336.	290.78	257.37	221.42	198.91
% of (C) to Gross Expenses (D)	49.01%	52.65%	50.31%	57.54%	57.57%

TABLE - 7: OPERATING RATIO AT CALCUTTA PORT

(Rs. in crores)

	1993-94	1992-93	1991-92	1990-91	1989-90
Cost at current replacement values (assets other than land) excluding W.I.Progress	609.91	599.69	630.23	641.29	654.7
Accumulated Depr. At current replacement value (assets other than land)	263.48	270.74	277.66	261.40	245.88
Annual charges for Dept.(Assets other than land) on replacement cost basis	22.41	23.62	27.31	28.98	32.55
Amount provided in the a/cs on historical basis as a charge to revenue (shown in the annual accounts).	3.54	2.98	3.17	3.22	3.27
Original cost at Book value (excluding W.I.P.) shown in the annual accounts	229.62	186.29	188.03	189.54	189.55
Accumulated Dept. On historical cost basis	89.35	85.93	84.51	82.84	79.64

TABLE - 8: LAND ESTATES OF THE CPT.

(Rs. in crores)

Landed estate in Calcutta	**Size** (acres)	**Approved uses**	**Size** (acres)
Kidderpur/Garden Reach area	2646.7	Reserved for CPT's use	1779.6
Alongside River front (including Strand Road and Cossipur Area)	126.7		
Budge Budge	206.7	lased out and others	1546.04
Howrah	345.9		3326.0
Landed estate in Haldia	6678	CPT's own use	2329
		Reserved for future use by CPT	1344
		Licenced	62
		Leased out	2071
		Reserved for future use for other industries	872
Total :	6678		6678

TABLE - 9: REVENUE EARNED FROM ESTATES OF THE CCALCUTTA PORT

(Rs. in crores)

YEAR	EARNINGS	EXPENSES	REVENUE (+) Surplus (-) Deficit
Calcutta Dock System			
1989-90	10.88	1.83	(+) 9.05
1990-91	12.46	2.24	(-) 10.22
1991-92	15.07	2.61	(+) 12.46
1992-93	15.67	2.47	(+) 13.20
1993-94	16.09	2.57	(+) 13.52
Haldia Dock Complex			
1989-90	2.62	3.57	(-) 0.92
1990-91	3.47	3.98	(-) 0.51
1991-92	4.40	5.18	(-) 0.87
1992-93	9.89	5.98	(+) 3.91
1993-94	9.40	7.15	(+) 2.25
Calcutta Port Trust			
1989-90	13.50	5.40	(+) 8.10
1990-91	15.93	6.22	(+) 9.71
1991-92	19.47	7.79	(+) 11.68
1992-93	25.56	8.45	(+) 17.11
1993-94	25.49	9.72	(+) 15.77

LABOUR UNDER CALCUTTA DOCK LABOUR BOARD

S.B. Das

The objective of this paper is to present a brief review of decasualisation schemes for labour in the major ports of India framed under the Dock Workers (Regulation of Employment) Act, 1948 with particular reference to Calcutta Dock Labour Board. The observations of the Royal Commission on Labour can be a convenient starting point in this regard. In its report submitted to Government of India in March, 1931, the Royal Commission recommended decasualisation of Dock Workers with a view of securing "as large a measure of regular employment as the nature of calling will allow". According to this report, "the aim should be, first, to regulate the number of dock labourers in accordance with the requirements and, secondly, to ensure that the distribution of employment depends, not on the caprice of the intermediates, but on a system which, as far as possible, gives all efficient men an equal share".

The employment of dock workers all over the world has problems peculiar to itself. This is due to the fact that the passing of traffic through a port is subject to wide fluctuations which are not necessarily seasonal or otherwise cyclic and occur daily depending *inter alia* upon the number of ships entering or leaving a port on any day, the amount of cargo to be loaded or un-loaded, the type of cargo and the way it is received or despatched, the nature of mechanical equipment and facilities available both aboard ship or ashore and the speed at which the cargo can be cleared from the shore or made available for shipment. The demands for dock workers vary correspondingly and their employment tends to be casual. In the absence of any effective control or limitation on those who may offer for employment in the docks on any day, the position is aggravated when agricultural workers also seek employment in the docks during their lean season.

The earnings of dock workers in those circumstances would not only vary from worker to worker but also from period to period for an individual worker. This placed the domestic economy of dock-workers in precarious state. The problem of employment of dock workers, therefore, has drawn attention of all those countries of the world who are engaged in maritime activities. In India, which was under the dominion of British Kingdom, this aspect also was not lost sight of and the report of the Royal Commission on labour, submitted to the Government in 1931, envisaged framing all necessary regulations to give effect to the concept of decasualisation with a view to having stabilishing effect on the income of each dock worker. The Dock Workers (Regulation of Employment) Act, together with decasualisation schemes were framed in Britain in 1936; but framing of Indian Act and Schemes was delayed by the Second World War.

The first legislative action was taken by the Government on the recommendation of the Royal Commission on Labour in 1948 and the Dock Workers (Regulation of Employment) Act was passed by the Dominion Legislature as Act IX of 1948 and was put on Statute after it had received the assent of the Governor General on the 4th March, 1948. Both the U.K. and the Indian Acts provide for framing *schemes* to ensure regularity of employment in the ports.

II

The cargo from the ships is unloaded on the shore or overside into lighters. The process of loading cargo into the ships may also be either from shore or from lighters. In connection with this loading and unloading of cargoes, labour is engaged on board the ship and in the lighters. The port authorities supply labour for work on shore. The work of loading and unloading of cargo into or from the ship is done by dock workers engaged through stevedores, who act on behalf of the ship. The stevedores or the stevedoring companies carry on their business under a licence granted by the port authorities on an annual basis. These licensed stevedores have also to register themselves with the dock labour boards.

Prior to registration of dock workers under the decasualisation schemes, there was no security of employment and the wages of these workers varied with the contractors. There was a lot of agitation. Various

measures were taken to meet this situation. The action of the Bombay Stevedores Association in 1949 of registering workers and allotting them work in rotation was their first step towards decasualisation. The first decasualisation scheme was notified by Government of India for Bombay Port in 1951. Schemes for other ports followed. These schemes are almost identical in important details and their main purpose is to ensure greater regularity of employment for dock workers to secure adequate number of dock workers for efficient performance of dock work. They apply to the class of workers specified in the schedules attached to the respective schemes.

The wages of the stevedore workers in Calcutta, before their decasualisation, were those which were prevalent from 15-1-1951 onwards as a result of an agreement. The prevalent rates of wages of the stevedore workers in Calcutta are shown in Table-1.

The present Dock Labour Boards are tripartite bodies, comprising equal number of representatives of the Central Government, the dock workers and the employers of dock workers including shipping companies. The number is either 12 or 15. In Calcutta & Bombay, the number of members is 15, whereas in Madras,Vishakhapatnam, Cochin, Kandla and Murmugao, the number is 12.

The Act of 1948 *inter alia* provided for registration of dock workers by a *scheme*, constitution of an Advisory Committee, appointment of Inspectors for the purpose of the Act and procedure for taking cognizance of any offence. The Act did not provide for constituting whether as a body corporate or otherwise the authority to be responsible for administration of the *scheme*. Accordingly, the Dock Workers (Regulation of Employment) Schemes framed for Bombay, Calcutta and Madras Ports in 1951-52, contained the provision for establishing a tripartite Dock Labour Board in each Port for administration of the *schemes*. Thus initially the Dock Labour Boards were creation of the *schemes* framed under the Act. It was subsequently considered that it would be desirable to provide for the establishment of the Dock Labour Boards in the Act itself. Accordingly, by the Dock Workers (Regulation of Employment) Amendment Act, 1962 the establishment of Dock Labour Boards came directly under the Act.

The Calcutta Dock Labour Board was constituted on 2nd September, 1952 and the Scheme was implemented with effect from 5th October, 1953. According to the Calcutta Scheme, the Calcutta Dock Labour Board were entrusted with work of regulating the employment of the following categories of workers, like (a) Deck Foreman, (b) Hatch Foreman, (c) Winchman, (d) 9 workers of a Stevedoring Gang,viz.Sardar,Mate,4Khamalis and 3 Rollias, (e) Riggers and (f) Tally Clerk.

According to the *scheme* framed under the Act, the Dock Labour Board was entrusted with the function of regulating the employment, wages, etc. of Stevedoring workers, although according to the Act, a *scheme* could have been drawn up theoretically to regulate the employment, wages, etc. of all waterfront workers including the shore workers employed by Port Authorities. Since the workers under the Port Authorities were already enjoying a greater amount of decasualisation, the *scheme* limited the functions of the Board to stevedoring workers and stevedores only.

III

As is well-known to everybody, every shipping company, shipping agent or charterer enters into contract with a Stevedoring Company or Companies for unloading or loading of vessels. The Stevedore engages on board the labour of categories mentioned above, whereas the Port Authorities employ their own labour and Cranemen on shore. Before the setting up of the Dock Labour Board, the stevedores engaged their own labour through petty contractors or otherwise and most of the labour were casual. With the introduction of the Dock Labour Board, however, the Stevedores have to employ the labour registered by the Board, either by day to day indenting or by having some of the labour allotted to them by the Board as their monthly workers or by a combination of both methods. The Board does the booking of the registered workers at its different Call Stands. These two sets of workers on board the ship and ashore are complementary to each other in the loading and unloading of ships in the Port. At many foreign ports, however, one gang of workers, part of whom work on the ship and part on the shore, carry out the work.

The working of Dock Workers (Regulation of Employment) Schemes, introduced in early 1950 at the Ports of Bombay, Calcutta and Madras, evoked a number of complaints both from the employers and the shipping interests as well as from the workers. The Port

Authorities also complained of decline in output and delay in turnaround of ships since the introduction of schemes. The Scheme had not been long in operation when complaints of various nature started coming to the Government. By the month of May 1954, the *go-slow* movement amongst workers had become intense and chronic in Calcutta. On 15th May, 1954, at a meeting held in Delhi and attended by the representatives of employers, workers and the Chairman of Calcutta Port Commissioners, a settlement was arrived at. It was agreed *inter alia* that the Chairman for the Port of Calcutta will have the authority at all times to decide whether stevedore labour is working normally or restored to *go-slow* and he shall have special powers to deal with the workers who may resort to such behaviour. The position, however, did not improve in the Calcutta Port and the Chairman of Dock Labour Board had to assume emergency powers vested in him under the Scheme.

The Government of India appointed an Enquiry Committee under the Chairmanship of Shri S.S. Vasist, which was called upon to report on the working of the various Dock Labour Board's Schemes in operation in different ports. The Committee submitted its report in September, 1955 and in the light of its recommendations, the three schemes existing at the Ports of Bombay, Calcutta, Madras were revised and new schemes were introduced from October, 1956. Some of the important recommendations of the Vasist Committee may be relevantly mentioned below :

(a) It would be in the furtherence of greater regularity of employment and the efficient performance of dock work if the monthly registers are not only retained but progressively expanded. The rate of expansion of the monthly register can be considerably quickened if the employment of workers on a monthly basis is allowed not only by individual employers but also by groups of employers. The employers or groups of employers should be allowed to select workers for monthly employment.

(b) In order to ensure reasonable output from workers and minimise the possibilities of the turnaround of ships in Indian ports not being maintained at an acceptable level of efficiency in future, wages paid to workers employed in connection with loading and unloading of cargo must be linked with productivity and a system of *payment by results* should replace the present system of time rate wages. It would also be desirable to provide for *incentive bonus* in the system.

(c) Further regulation of employment of certain categories of Dock Workers to be decided by the Dock Labour Board from time to time should be secured by adopting a procedure of listing the workers in those categories as well as the employers of those workers. Rules may be framed under the Act to regulate the employment of listed workers and they may be taken in hand at all the three Ports, in respect of the following categories : (i) Chipping & Painting Workers; (ii) Stitchers & Baggers; (iii)Salt Workers; and (iv) Coal Workers;

In pursuance of the Vasist Committee's recommendations, the Calcutta Dock Workers (Regulation of Employment) Scheme, 1956 was promulgated by the Government. In addition, the Calcutta Unregistered Dock Workers (Regulation of Employment) Scheme, 1957 was also framed. The adoption of the datum-type of piece rates schemes for both shore and stevedore workers could be made, but unfortunately it was not possible to introduce such a scheme in Calcutta. It was seen with the listing of Chipping and Painting Workers, Salt Workers, Stitchers and Baggers that the traffic passing through the Port of Calcutta started declining and, as a result, the man power assessment showed huge surplus. Thereupon the Government appointed a Tripartite Expert Committee for Calcutta Docks in December, 1967 under the Chairmanship of Prof. N.N. Chatterjee, formerly Jt. Secretary in the Ministry of Labour, Government of India, to make suitable recommendations. The Tripartite Report Committee had nine (9) members out of which number of workers' and employers' representative were three (3) from each side.

The Tripartite Expert Committee submitted its recommendation to the Government in August, 1969, which *inter alia* included the following :-

(a) The Unregistered Scheme i.e. Calcutta Unregistered Dock Workers (Regulation of Employment) Scheme, 1957 should be replaced by a suitable registered scheme for listed categories of workers.

(b) In order to establish proper control and the employer-employee relationship between the stevedores and the workers at least 75% of the

work-force should be on the monthly register and the entire strength of Supervisor categories, such as, Deck Foreman & Hatch Foreman should also be on the monthly registers.

(c) An attractive Voluntary Retirement Scheme should be introduced to reduce the surplus labour force.

(d) An incentive scheme for all cargo handling operations should be introduced.

(e) The age of superannuation for new entrants should be set out in the Scheme and it should be fixed at 55 years. For the new entrants, the maximum age for recruitment should not exceed 25 years."

Following the recommendations of the Tripartite Expert Committee, the Calcutta Dock Workers (Regulation of Employment) Scheme, 1970 and the Calcutta Chipping & Painting Workers (Regulation of Employment) Scheme, 1970 were framed. Both the Schemes came into operation from 1st July, 1970 and another new Scheme, the Calcutta Dock Clerical & Supervisory Workers (Regulation of Employment) Scheme, 1970 was introduced with effect from 16th September, 1971.

IV

The concept of forming a post of casual workers in the Docks/Ports in order to distribute the fluctuating work-load equitably amongst all the floating workers is indeed laudable in theory. In practice, however, things have not worked out as have been planned and it is due to this factor that the dock workers in general in all the Indian Ports, particularly in Calcutta, are in a state of ferment. Fundamentally all the decasualisation schemes has the objective that employment of dock workers should change from casual to regular under the employers who in this case are mainly the stevedores. It was stipulated in the 1970 Schemes that a maximum of 75% of the total work-force under every scheme should be on the monthly registers of the employers within two years of the implementation of the schemes. But this provision could not force the employers to take more than a small number of workers on the monthly registers on the plea that the existing work-force was much more than what is required by the Trade. Therefore, till today, most of the dock workers in Calcutta and every other Indian Ports are still in the reserve pool which is theoretically a pool of casuals.

The word theoretically is used advisedly inasmuch as the word reserve pool because today one can hardly identify a pool of casual workers. The Schemes with all their shortcomings have conferred on these large groups of casuals a measure of security and welfare benefits they could not have otherwise secured under conditions from their employers, i.e. the stevedores. Today's shortcomings have, therefore, to be seen in historical perspective. Such a protective piece of legislation as the Dock Workers (Regulation of Employment) Act was badly needed in an industry where uncertainty of employment was endemic. The various Dock Labour Boards and the Government have extended to the Dock workers in the reserve pools service benefits which come close to the benefits that any fully decasualised workers are entitled to. In many cases these benefits were extended to the workers without even consulting the employers. The result of all these has been that over the years the dock workers in the reserve pool have slowly come to regard the Dock Labour Boards as their real employers in place of their actual employers i.e. the stevedores. A peculiar position has now arisen in that we have a situation where an organization which has come to be looked upon as the employer is not the organization responsible for obtaining production from workers. While this fundamental shift in thinking or attitude has taken place in regard to the identity of employer, no change whatsoever has taken place on the question of the employer responsible for production, i.e. the stevedore.

As envisaged in the Schemes, in case where there is adequate and not more than adequate number of workers, the regularity of employment being governed by flow of traffic, the workers will be ensured employment for almost all the days in a month excepting weekly offdays and paid holidays. On the other hand, if the workforce is more than the actual requirements, there will be less employment for workers necessitating payment of minimum guaranteed wages and attendance allowance for their days of unemployment, which according to the Schemes should not be below 12 days and above 21 days in a month.

Therefore, the more the number of workers the less would be availability of employment for them and as consequential effect owing to more payment on account of idle-time wages, the rate of levy will be more. The rate of levy will vary inversely with the level of employment. The present rates of levy in respect of

different categories of registered dock workers are shown in Table-2.

As stated above, the main objective of the Schemes was to ensure greater regularity of employment for the dock workers and, for this purpose, an adequate number of workers was to be maintained. It is, therefore, necessary to correlate the number of workers with the requirement of the trade. In an ideal situation envisaged by the Schemes, the workforce should be limited to a normal level with marginal variations to meet the additional requirements of trade, ensuring payment of certain minimum guaranteed wages to the workers in the event of any fall in their employment due to certain unforeseen factors. In such a situation, the payment of minimum guarantee should be minimal only. However, the Schemes developed in India have practically become unemployment insurance schemes in certain ports as in Calcutta, due to existence of an excessive labour force, at least in certain categories. This is an anomaly in a country like India where we are nowhere near a full employment economy. In short, this form of non-contributory social security has the character of social assistance. This confers a unique advantage on the registered dock workers which is not enjoyed by any other categories of workers in any industry in the country. It is necessary to rectify this basic defect by relating the number of workers according to the requirement of the trade. Unfortunately such reduction has not been possible in most of the Dock Labour Boards so far, excepting the Calcutta Dock Labour Board where more and more categories have been registered or listed. Only from time to time attempts have been made to operate certain voluntary retirement schemes.

In the absence of correlation between the workers and the actual requirements of the trade and the consequent perpetuation of unemployment benefits for a large number of workers, excessive aspirations and expectations are kindled in the minds of other workers. As a result, there is large queuing up of casual workers before the doors of Dock Labour Boards for entry into Schemes at every Port to enjoy benefit of this extra-ordinary form of unemployment insurance. A large number of trade unions find it easy to exploit the situation. The trade unions also get exploited and pressurised by it, in their turn, because of the nature of the existing Dock Labour Board system having equal representation of labour and employees. The provision regarding regulation of the number of workers required from time to time becomes a dead letter. Thus a vicious circle is created — the larger the number of categories registered or listed, the greater is the demand for registration and listing of other categories. So a surplus labour force is built up as a social cost. The social evils of paying for idleness need no clarification or elaboration. The will to work goes down and informal incentive schemes develop to motivate the workers. Thus the basic philosophy of decasualisation schemes was in practice weakened by pressure tactics of various groups with high expectations led by a large number of militant trade unions, not all of whom had altruistic motives. The stevedore employers also found it easy, under such a condition, to pass on to the reserve pool workers in their employment whom they did not wish to retain.

V

As stated above, the existing Dock Workers (Regulation of Employment) Act, 1948 is broadly based on the U.K. Act of 1946. It is a hang over of the British system and has been continuing for more than four decades while the system in the U.K. has undergone radical changes, we are continuing the old system with all its pitfalls. The UK Port Industry has discarded the system and tried to restore direct employer-employee relationship between the dock workers and their stevedore employers. In India, we have not only stuck to the old system but also introduced various refinements to add complexities in an economy where unemployment is one of the biggest constraints for development. A culture has been created where idleness is paid for and go-slow is encouraged and the objective of every incentive scheme is watered down.

The productivity of dock workers which is essentially required for speedy turn-round of ships has not improved much over the years. Even today, while casual workers work side by side with the decasualised workers at every Port, the performance of former is superior to that of the latter. In other words, another basic objective of the Dock Labour Board Schemes, mainly that of economic and efficient operations has been steadily deviated from.

Government of India, however, has given thought to the aspects discussed above, and following the recommendation of the 12th Meeting of the Dock Workers Advisory Committee, held in Bombay, on 8th December, 1973, appointed a Two-man Committee with

Prof. N.N. Chatterjee, retired Joint Secretary, Ministry of Labour, Government of India, as its Chairman and Dr.S. Roy, Director (Planning & Research), Bombay Port Trust as part-time Member, to review the decasualisation schemes and allied matters in the Major Ports, in May, 1975. The Committee submitted its report in February, 1976. Some of the significant observations/ recommendations made by the Committee are mentioned below :

(a) The Dock Labour Board system, as it has developed to-date, has definitely outgrown its utility. The decasualisation process which has no doubt conferred very substantial benefits on the Dock workers must continue. But for this purpose it is not necessary to have an ill-defined, deceptively organised amphorous body like Dock Labour Board. Legally, it is not the employer of dock workers, yet it has powers of intervention in labour management relations which encourage labour intransigence. Its supervision of the work of stevedores has a poor record,as the stevedores themselves are strongly represented on it. The existence of such a body amounts to running a parallel system at each Port hampering integration of cargo handling operation retarding the development of a sense of commitment of dock workers to the port industry as a total system unnecessarily adding to the complexities of man-management at the ports. The Committee, therefore, recommend as follows : (i)The Dock Labour Board should be converted into an advisory body, pure and simple, with more comprehensive representation of the users of the port like public sector enterprises who are now not represented; (ii) The executive and financial powers and responsibilities of the board shall be vested in the Chairman and Deputy Chairman of Dock Labour Board, as an interim measure, till the proposed cargo-handling Department of Port Trust takes over the administration of the existing DLB Schemes.

(b) The dock workers should be progressively decasualised and integrated with the shore labour over a period of five years.

(c) The Administrative Bodies of Employers under the decasualisation schemes should be abolished and functions discharged by them should be allocated to the Deputy Chairmen of the Dock Labour Boards or the successor organisation. The officers and staff of the Administrative bodies should be transferred to the DLB or its successor body.

(d) In respect of Calcutta Port, the number of categories being more, there is need of interchangeability and the same should be enforced as early as possible so that when work in available no idle time is paid for.

(e) There are too many categories in Calcutta. Therefore, certain categories like Batch Foreman, Weighment Supervisor, which are superfluous should be abolished. As for other categories, they should be regrouped into 4-5 categories and interchangeability amongst them should be enforced.

(f) In view of the urgency of some of the problems facing Calcutta Port, the Committee submitted an interim report to the Government on 15th September, 1975, which *inter alia* recommended disposal of surplus work-force in the Reserve Pool of Calcutta Dock Labour Board and the manner in which the same could be made.

(g) As regards the Monthly gangs under the stevedores, the Committee recommended that these gangs should be disbanded. The booking of these men should be done entirely by the Dock Labour Board and they would not lose their status as monthly workers but will be within the provision of the Schemes as also they would be rotated between the different Stevedores like any other workers in the Reserve Pool.

(h) Regarding discipline, the Committee made certain recommendations some of which are mentioned as follows : (i) The stevedore should have adequate disciplinary powers. As a measure of penalty they should have power to suspend a worker for a period upto 7 days; (ii) There should be a provision for penalty in the Schemes for recovery of any loss caused both from workers and Stevedors

(i) In case of malpractices indulged in by the stevedores, there should be a provision for suspension of one year. The disciplinary authority against the stevedore should not be vested with the Board where the stevedores are strongly represented.

The changes that have occurred in UK Port Industry since 1967 provide instructive data for our Dock Labour Board System. These are as follows:

(a) Decasualisation of all registered dock workers and allocation to permanent employers;

(b) Reduction of such employers to increase the viability of the remaining employers;

(c) Abolition of piece work system and introduction of shift system. (However, the abolition of piece rate incentive scheme led to reduction in productivity and within a matter of months a bonus scheme had to be introduced for improving productivity.)

(d) Abolition of restrictive practices and fixed Manning Scales in Dock work and introduction of flexibility of labour concept whereby men would shift from job to job and ship to ship in any shift.

(e) From 1967 onwards a planned attempt was made to reduce the number of casual labour. The *Temporary Unattached Register of Dock Workers* was abolished and Government financed a voluntary retirement scheme on payment of upto 4,000/- sterling per worker who was physically unfit or over 55 years of age.

In this connection comments on labour relations in the Information Paper published by the Labour Party Research Department in September, 1974, which is equally relevant even in Indian context, reads as follows:-

(a) The poor labour relations in docks in recent years reflect the malaise of a traditional industry in the throes of delayed modernisation. The origin of the problem is to be found in the rapid changes in systems of cargo handling which have been introduced in the last decades (Container, Roll on/Roll off and increased mechanisation for handling certain bulk cargoes) and the alterations in the Ports traffic pattern which have followed. These have meant a substantial decline in the absolute number of men required for cargo handling with some ports much harder hit than others.

(b) There is considerable mistrust in the ports of both the intentions and effectiveness of management.

However, from the British experience certain things became clear. Progressive improvement in technology cannot be resisted for long, but any impact on labour should be offset by well thought out and substantial retirement benefits. It is also clear that for operational efficiency, rigidity of categorisation of labour and fixed manning scales are hindrance.

Following the recommendation of the Two-Man Committee, Calcutta Dock Labour Board effectively reduced about 3500 surplus workers in December 1976 by grant of liberalised retirement benefits. Nevertheless, the present number of around 3500 workers both in Reserve Pool and in the Monthly Register of Employers is much above the optimum requirement of workforce. The present strength of registered dock workers (categorywise) is shown at Table-3

Surplus employees which were assessed to be about 450 (out of a total 1400) in the year 1985-86 by the Staff Inspection Unit of the Ministry of Finance, Government of India, was assessed taking into consideration the existing strength of workers which was about 9000 at the material time. Further assessment of requirement of employees is also warranted following the substantial decrease in the strength of workers since the mid-Eighties. A lucrative Voluntary Retirement Scheme for both workers and employees was introduced in 1992 by Calcutta Dock Labour Board and certain measures to deploy the surplus labour in other organisations, like GRSE, CPT etc. as also undertaking the stevedoring work by the Board itself have been taken. However, these are not surely the ideal remedies of the problem that the Calcutta Dock Labour Board is facing today.

Some of the major problems facing the Board are noted below :

a) There has been a drastic fall in the volume of cargo available for handling by registered dock workers at Calcutta. 2.6 million tonnes cargo was handled by the registered dock workers in 1993-94 as against 7.8 million cargo handled in 1964-65. A statement showing the traffic handled by CDLB and the level of productivity is given at Table-4.

b) Of late, due to some increase in the level of productivity owing to introduction of improved method of cargo handling and change in the nature of cargo-mix, the employment level of registered dock workers has further gone down. Consequentially, payment of idle-time wages as minimum guarantee to the registered dock

workers has increased considerably.

c) Though the financial system in vogue in different DLB Schemes provide for adjustment of the rate of levy with the rise and fall of employment, Calcutta Dock Labour board has not been able to appropriately exercise such options in the apprehension of exhorbitant rise in the trade cost in Calcutta Port which has resulted in continuous deficit in the budgetary provision of the Calcutta Dock Labour Board. A statement showing the finance position of CDLB is placed at Table-5.

d) There is practical difficulty of fixing the minimum guarantee on the basis of actual employment of a category in terms of performance of the past 12 months as provided in the CDLB Schemes inasmuch as this would cause reduction of the existing incomes of workers which is well-protected by the recommendations of the Pay Committees.

e) Although the Administration Body of Employers had been removed in Calcutta in December 1975 and the Deputy Chairman, Calcutta Dock Labour Board, had assumed the powers of the Administration Body, the restrictive practices indulged in by the stevedores have not been possible to be curtailed altogether;

f) The datum of various cargoes which are abysmally low for registered dock workers at Calcutta could not be suitably revised upward owing to opposition from the Trade Unions. As a result, payment of incentive wages being made to the workers is quite high even when the workers handled a small quantity of cargo.

g) The existing set up of Calcutta Dock Labour Board has proved to be a major hindrance in the effective implementation of various objectives of the decasualisation schemes for which there is imminent need of making effective changes in the structure and set up of Calcutta Dock Labour board.

To remedy the ills from which the DLB Schemes are suffering, the Major Ports Reforms Committee had *inter alia* recommended the abolition of DLBs and set up of United Cargo Landing Agencies in the Major Ports under the Port Trust management, as suggested by the Two-Man Committee. The Central Government had examined the issue in consultation with Port Trusts at the level of the Minister of Surface Transport and the recommendation of the MPRC of setting up of a United Cargo Handling Agency by abolishing the DLBs did not find approval of the government. However, the concept of merger of DLBs with Port Trusts has been found to be ideal in the existing context and accordingly various exercises have been undertaken in this direction in the recent past. While it has been agreed in principle to merge DLBs with the Port Trusts, the authorities of the respective Port Trusts have been given the prerogative to proceed in the matter as per their convenience. The various issues involved in the matter have also been taken into consideration and certain broad guidelines evolved for implementation of the merger proposal as follows :

(a) The entire cargo handling system in the Port should be bestowed on a single management.

(b) The modalities for merger should be worked out by the Port Chairman in consultation with all the parties concerned.

(c) The merger would be given effect to in phases (i)in the first phase the Administrative arrangements existing in DLBs would be taken over by the Port Trust, (ii)in the second phase strict compartmentalisation of the work could be relaxed and (iii)in the subsequent phases reduction in the gang strength and related matters would be considered by the individual Ports and DLBs.

(d) Provisions of relevant Statutes are to be modified where necessary to facilitate the merger.

Following the principle in the decision of the National Government, the Bombay Dock Labour Board has since merged with the Bombay Port Trust and an instrument has been signed to this effect on 25.1.94. A decision has also been taken for merger of Cochin & Madras Dock Labour Boards with the respective Port Trusts. In Calcutta, the process of integration has been initiated.

With the merger of Dock Labour Boards with Port Trusts, it would be necessary to streamline the manning scales in order to ensure interchangeability amongst workers and to reduce the number of categories, increasing the level of productivity by adequately revising the existing low datum and taking appropriate measures including voluntary retirement for disposal

of the surplus workers and employees. Since the different decasualisation schemes have outlived their utility, it is high time to get rid of this legacy of the British system. Integration of cargo-handling operations together with modernisation of Port facilities will usher in a new era in the Port Industry of the country. The changes would manifest speedy and efficient services to the trade and port users. This would make the Indian Port systems competitive and attractive to the maritime world in the coming century

TABLE - 1 : DIFFERENT RATES OF WAGES OF STEVEDORE WORKERS AT CALCUTTA EFFECTIVE 15-1-1951

Category	Day shift	Night shift	D.A. per Shift	Wages	D.A.
Deck Foreman	Rs. 8.00	Rs. 9.00	Rs. 3.35	Rs. 215*	Rs ..
Hatch Foreman	Rs. 5.00	Rs. 6.00	Rs. 3.25	Rs. 160*	Rs. ..
Tally clerks	Rs. 3.00	Rs. 4.06	Rs. 3.25	..	Rs. ..
Winchmen	Rs. 2.50	Rs. 3.50	Rs. 3.25	Rs. 80	Rs. 55
Sirdars	Rs. 5.00	Rs. 5.81	Rs. 3.25	Rs. 100	Rs. 55
Mates	Rs. 3.00	Rs. 3.56	Rs. 3.25	Rs. 80	Rs. 55
Sr. Khamails	Rs. 2.50	Rs. 2.94	Rs. 3.25	Rs. 70	Rs. 55
Jr. Khamails	Rs. 2.06	Rs. 2.44	Rs. 3.25	Rs. 60	Rs. 55
Sr. Rollias	Rs. 1.56	Rs. 1.94	Rs. 3.25	Rs. 58	Rs. 55
Jr. Rollias	Rs. 1.50	Rs. 1.75	Rs. 3.25	Rs. 55	Rs. 55

TABLE - 2 : RATES OF CALCUTTA DOCK LABOUR BOARD

	Genl. Levy	Spl. Levy	Welfare Levy	Wage Fund Revision	Bonus	Workers Welfare & Compensation Fund	Total
Gang,W/D,H/F, D/F&TC	235%	40%	22%	24%	18%	1%	340%
Dk.Fitter,T/Dk.Ft.	240%	40%	22%	24%	18%	1%	345%
T/GPM,GPM & Carpenter	190%	40%	22%	24%	18%	1%	295%
Salt Workers	3%	-	22%	-	18%	1%	44%
DCS Workers	235%	40%	22%	18%	1%	1%	340%
Boggors & Stitchers	320%	40%	22%	24%	18%	1%	425%
Monthly Workers	74%	-	22%	-	-6% (QNC)	1%	103%

Container Stuffing/Destuffing : Box rate amounting o Rs.2,390/- for 4 boxes on a sliding scale

Chipping and Painting Workers : Consolidated rate of charges ranging from Rs.1,954.50 per mans-shift for Indian vessels.

TABLE - 3 : CATEGORYWISE STRENGTH OF CALCUTTA DOCCK LABOUR BOARD WORKERS AS ON 01.11.94

Sl. No.	Category	Strength of worker as on 01.11.94
1.	Deck Foreman	46
2.	Hatch Foreman	40
3.	Tally Clerk	93
4.	Winch Driver	194
5.	T/Derrick Fitter	39
6.	Derrick Fitter	311
7.	Sardar	143
8.	Mate	167
9.	Sr. Mazdoor	866
10.	Signaller	283
11.	Stitcher	31
12.	Sardar Supervisor	11
13.	Bagger	29
14.	Sliceman	6
15.	Chapadar	7
16.	T/General Purpose Mazdoor	96
17.	General Purpose Mazdoor	626
18.	Carpenter	72
19.	Sardar Sareng	2
20.	Tindal	13
21.	'A' Worker	71
22.	'B' Worker	49
23.	'BB' Worker	8
24.	D (L) Worker	-
25.	Chief Clerk	52
26.	Sr. Supervisor	52
27.	Asstt. Clerk	130
28.	Asstt. Supervisor	63
29.	Jr. Clerk	97
30.	Jr. Supervisor	1
		3598

TABLE - 4 : TONNAGE HANDLED & PRODUCTIVITY ACHIVED BY WORKERS UNDER THE CALUTTA DOCK LABOUR BOARD

Year	Total Tonnage handled	Containers	Average rate of productivity
1981-82	3.26	(0.15)	69.83
1982-83	3.28	(0.19)	75.90
1983-84	3.00	(0.17)	77.64
1984-85	3.00	(0.24)	75.83
1985-86	2.85	(0.40)	71.67
1986-87	2.71	(0.45)	85.43
1987-88	2.91	(0.45)	90.39
1988-89	2.66	(0.49)	100.23
1989-90	2.73	(0.61)	100.07
1990-91	2.59	(0.60)	102.40
1991-92	2.44	(0.67)	110.88
1992-93	2.70	(0.96)	131.09
1993-94	2.63	(1.26)	156.56
1994-95			
(till Oct.'94)	1.49	(0.66)*	141.69

* Excluding Tare Hight

TABLE - 5 : FINANCIAL POSITION OF CALCUTTA DOCCK LABOUR BOARD

Year	Income	Expenditure	Surplus(+) Deficit (-)
1965-66	163	176	-13
1970-71	710	735	-25
1975-76	1,077	1,110	-33
1980-81	949	1,247	-298
1981-82	1,755	1,889	-134
1985-86	2,613	2,694	-81
1989-90	3,203	3,167	+36
1990-91	3,288	3,385	-97
1991-92	3,225	3,569	-344
1992-93	3,400	3,792	-392
1993-94	3,140	4,005	-915

81. Truck Shed

82. Railway Yard

CHANGE IN WORK CULTURE IN HALDIA DOCK COMPLEX

D.K. Roy

The Work Culture is a term with wide connotation and has to be considered in relation to a particular organisation or group of organisation in its historical context. To understand the work culture of the employees of the Haldia Dock Complex, which is the objective of this paper, one has to take into consideration the social, political,economic and environmental conditions in which the concerned employees have grown up and developed themselves.

Before the industrial activities started in the neighbourhood, sometime in the mid-fifties, the Haldia region was a vast stretch of agrarian fields and part of the Doro Paragana under Sutahata Sub-Division of District of Midnapore. The land mass constituted mainly of lowlying agricultural paddy fields bordered by the Rivers Hooghly and Haldi and crisis-crossed by innumerable canals connecting these two rivers. The main occupation of the people was agriculture and fishing besides some cottage industries. The land was fertile, catches were plenty and life was easy. Education was minimal. Economy was poor and environmental conditions were not conducive for strenuous activities. The District of Midnapore was in the forefront of the Independence Movement and lot of political movements took place during that period. The common people also participated in large numbers in such movements and aspired for economic development.

It is in the back drop of such a scenario that industrialisation started at Haldia, first with unloading of food grains at the Haldia Anchorage. Construction of the 1st Oil Jetty and Indian Oil Corporation Refinery and Haldia Dock Project in the '60s followed quickly. Subsequently, a number of big industries like Hindusthan Fertilizer Corporation, Hindusthan Lever Ltd., Chloride India Ltd., etc. were established at Haldia. The quiet hamlets of the region changed into a hub of industrial activities. Large scale acquisition of lands resulted in the eviction of hundreds of people to establish the plants. This disturbed the peaceful life pattern of life of the surrounding society around Haldia.

Many people secured jobs in the industrial organisations while others were struggling and aspiring for similar placement. Flow of money increased abruptly in the rural economy, creating social disbalance. Different political interest groups became very active in the Haldia region to gain control over the new trade union activities. As a result, militant tendencies influenced the Trade Union activities at Haldia in late '70s and early '80s. The situation was highly critical and tense in the fields of Industrial Relations, which was chequered with frequent stoppage of work, *gheraos* and even leading to physical assaults on management personnel.

With the passage of time, however, and due to changes in the social, economic and political scenario in the country as a whole and in the State of West Bengal in particular, the trade union activists gradually turned towards responsible Trade Unionism and the workers also realised the need for better employer-employee relationship and better productivity in the interest of all concerned.The management, fortified with the past experience, also tried to adopt a more pragmatic approach towards dealing the grievances of the employees to the extent possible within the framework of the existing rules and regulations. This helped to a large extent to gain the confidence of the workmen and their representatives towards better appreciation of the management's intentions and betterment of the Industrial Relations.

The rate of productivity at the initial stage was rather low. This is due to the fact that the labour were drawn mainly from the surrounding rural areas who did not have any previous industrial background. Technical expertise of the people were also not adequate to meet the requirement of the sophisticated plants and equipment installed at Haldia. However, with gradual acclimatization of the employees with industrial culture and with gradual improvement in Industrial Relations, better results are in the offing. Productivity, however, is dependent on many other factors including

improvement in plant-capacity, maintenance of plants and equipment, continuous and uninterrupted flow of traffic, etc. Better productivity can also be achieved through well designed Incentive Scheme and concerted human resource development activities.

So far as Incentive Schemes are concerned, at present there are three such in operation under Haldia Dock Complex in the areas of Mechanical Coal Handling, General Cargo handling and Railway Operations. These Schemes were adopted during the initial years of operation of Haldia Dock Complex, many of the provisions of which are required to be reviewed and revised both in terms of datum and rates of incentive, in the light of changes that had taken place in the plants and machineries, quality of materials handled and other relevant factors. One of the premier consultancy organisation, the Indian Institute of Management, Calcutta, was engaged sometime back for the review of the existing Schemes and, in the light of the reports submitted by them, reviews are under consideration.

Systematic training and development programmes for various categories of employees of Haldia Dock Complex have also been undertaken since 1993 and it is expected that it would be possible to achieve better results in near future. In short, during the short span of existence of the Haldia Dock Complex for the last 18 years, there has been a marked improvement in the work culture in the Haldia Dock Complex. There are reasons to hope for still better achievements in the years to come.

THE STATE OF INLAND WATERWAYS

Inland Water Transport (IWT) is a cost effective and fuel efficient mode. It is an ideal mode of transport for low value, high volume, non-perishable bulk cargoes. However, out of the present estimated freight traffic of 500 million tonnes (9300 billion tonne-kms.) moved by different transport modes, the rail and road virtually take the entire load and IWT carries a meagre 15 million tonnes (1.2 billion tonne-kms.)

At present, the IWT traffic is primarily arising from unidirectional movement of iron ore in the Mandovi-Zuari river system in Goa. Other IWT operations are currently restricted to a few stretches in the Bhagirathi-Hooghly river system, the Brahmaputra river, the backwaters of Kerala and in the deltaic regions of the Godavari-Krishna rivers. Passenger traffic is virtually limited to ferries operating at river crossings.

To examine options for developing IWT traffic, a number of Committees have been set up by the National Government. To name a few, these are the Gokhale Committee (1959), the Committee on Transport Policy and Coordination (1966), the Estimate Committee of Parliament (1968-69, 1974-75), the IWT Committee (1970) and the National Transport Policy Committee (1980). In accordance with the recommendations of these Committees, investments have been made on IWT schemes. The order of investments in this regard is shown in Table -1.

In 1982, the Government declared the Ganga-Bhagirathi System between Haldia and Allahabad as the National Waterway No. 1 and development and maintenance funds have been allocated in the Seventh National Plan 1985-90 for the improvement of this waterway. A pilot project on the Patna-Allahabad stretch is already being executed under the Indo-Dutch International Technical Cooperation Agreement. Inland Waterway Authority of India (IWAT) has been set up by Govt. in 1986 to develope IWT.

The principal participant of IWT is the Central Inland Water Transport Corporation (CIWTC) which is the largest operator of bulk and break-bulk cargo. Existing operational routes of CIWTC cover the North-Eastern States, West Bengal, Bihar and Uttar Pradesh. CIWTC primarily operates on the National Waterway No. I & II, and carries out lighterage work at Saugor also.

A fleet of about 150 modern propelled vessels/ Dumb barges with capacity ranging between 150Te and 1500Te are regularly used in the service. POL fleet consists of tankers and barges with modern discharge facilities, their capacity ranging from 450Te to 1500Te. CIWTC generally transports general cargo, foodgrain, fertilizer, cement, steel materials,coal etc. Traffic per annum is of the order of 3 to 4 lakh tonnes.

Most of the major river systems in India offer ample scope for development of IWT operations, but for the following reasons this mode has not been attractive :

(a) Diversion of water for irrigation, industrial & other needs and siltation leading to reduction in navigable depth.

(b) Lack of conservancy measures.

(c) Non-availability of adequate navigational aids.

(d) Terminal facilities at the loading and unloading points are non-existent or inadequate.

(e) Vessels are outdated and thus are not efficient for economic operation

The declared National Waterways of India will have a total length of 4885 km. These water-ways are noted in Table-2 :

To attain proper growth of IWT, it is necessary to carry out river management involving enforcement of safety requirements for navigation, construction of reliable embankment, revetment, linking system, stable channel system and maintenance of water balance in each route. In addition, it will be necessary to integrate other nodes through linking of IWT terminals with rail/ road, including development of inland ports with warehousing facilities, development of distribution centres of petroleum products including LPG bottling plants, setting up of coal dumps near IWT terminals and promotion of industrial complexes on the water front.

The general consensus is that IWT should be accorded an appropriate place in the transport system of India. It is a low cost, fuel efficient and eco-friendly mode. Nevertheless, it will take time before IWT assumes its expected state of development.

IWT linkages with the Calcutta Port are worth mentioning. Goods are loaded/unloaded at specified wharves linked to 29 KPD at CDS and the Barge Jetties at HDC. Several riverine routes are used. The National Waterway No. 1 is now used between Farakka and

Allahabad via Varanasi and Patna. This route can be developed if right navigation facilities are made available. Linkage with Nepal may help in developing traffic. Another route connects Calcutta with Pandu (on the Brahmaputra river) in Assam and Badarpour (on the Barak river) in Cachar. Traffic in these segments can improve if the route up to the Brahmaputra is extended to Dibrugarh and Tejpur and also to Silchar on the Barak. Bangladesh is also served by IWT. Treaty with Bangladesh for IWT traffic may improve the situation. CDS-HDC linkage for container traffic has suffered a little with the fall in total volume of such traffic. However, a self contained IWT terminal for container is felt needed. Halida-Budge Budge traffic of POL moved by IWT may be reduced if the pipe-line connection becomes functional.

(Based partially on information with the Port)

TABLE - 1 : OUTLAYS FOR ROAD, RAILWAYS AND IWT IN THE FIVE YEAR PLANS

(Rs. In Crores)

		Investment			% Share		
Five year Plan	**Period**	**Road**	**Rail**	**IWT**	**Road**	**Rail**	**IWT**
Fourth	1969-74	914	1050	9	46	53	0.5
Fifth	1974-79	1397	2350	25	37	62	0.7
Sixth	1980-85	4639	5100	72	47	52	0.7
Seventh	1985-90	7190	12335	226	36	63	1.0

TABLE - 2 : DECLARED AND IDENTIFIED NATIONAL WATERWAYS IN INDIA

National Waterway No.	**River System**	**Stretch**	**Stretch lingth** (Km.)
1.	Ganga Bhagirathi	Haldia - Allahabad	1620
2.	Brahmaputra	Dhubri - Sadiya	891
3.	The Sunderbans	Navigable length	415
4.	Godavari	Rajahmundry - Cherla	208
5.	West Cost Canal	Quilon - Periyar	173
6.	Mandovi & Suari River, and Cumbaraja Canal (Goa)	Navigable length	122
7.	Narmada	Hoshangabad - Sea	640
8.	Mahanadi	Dholpur - Cuttack	171
9.	Mrishna	Vijawada - Kurnool	420
10.	Tapti	Confluence of Gomati River - Sea	225
	Total		**4885**

COASTAL SHIPPING & CALCUTTA PORT

Around 50 million tonnes of coastal traffic (loading + unloading) is handled by all Indian Major Ports. At present Calcutta Port plays in important role in handling this traffic. About 32% of the traffic, handled at Calcutta Port is coastal tonnage and 34% of the vessels calling at the Port are engaged in coastal trade. At Calcutta Dock System, (CDS), about 39% of its total cargo is constituted of coastal traffic. Similarly, coastal trade constitutes 34-38% of traffic handled at Haldia Dock Complex (HDC). Coastal traffic and the total traffic handled at Calcutta Port during recent years is given in Table -1. The major commodities moving through CDS in coastal trade are POL (Product), general cargo, etc. At HDC, coastal cargo includes POL (Product) and Coal for various power plants for Southern India. Both the dock systems receive goods by coastal routes as shown in Table -2.

Number of ships handled by Calccutta Port in Coastal trade has registered increasting ttrend. During 1993-94 559 vessels in castal trade was handled by Calcutta Port aganist 334 vessels during 1987-88.

The entire coal traffic through HDC goes to Indian destinations by ships. Inititally, only one mechanised Coal Handling Plant had been planned for HDC with a capcity of 3.5 million tonnes. This Coal Handling Planed was utilised for handling coal, mainly on account of Tamil Nadu Electricity Board (TNEB). Coastal coal for Cement Industries, Railways, etc. were also handled at this berth. Subsequently, with a steep rise in the requirement of coal by TNEB and firm projection made by it upto 8.7 million tonnes per annum, it was felt necessary to augment the coal handling capacity at HDC. Accordingly, another berth (Berth No. 3), which was originally designed for handling iron ore, has been coverted in phases for handling coal. During 1993-94, a total of 3.6 million tonnes of coal was handled at HDC in coastal trade.

Coastal movement of POL (Product) is undertaken to rectify regional imbalances between demand and supply of specific POL (Product). At HDC, mainly imported POL is handled. HDC has two oilJetties located on the river Hooghly, for handling POl (Crude) and POL (Product.)

It should be mentioned, however, that Berth No. 2 was originally commissioned for non-dengerous POL (Product) in October 1991 and subsequently cleared for handling dangerous POL (Product) also in December 1991.

Apart from movement between HDC and other Major Ports, there is also some movement of POL (Product) particularly, Lube, Furnace Oil and HSD from the two Barge Jetties at HDC to CDS. The volume of this traffic has been separately indicated in Table -3 alongwith details of other coastal commodities. During 1994-95, 5.46 lakh tonnes of POL (Product) has moved by barges from HDC to CDS. There is ample scope for further utilisation of this cheap and relatively non-polluting mode of transport.

Coastal movement of steel through CDS & HDS has started in 1994-95. The traffic has high potential to increase.

Movement of container traffic by barges from CDS to HDC received a filllip with the induction of mainline sailings from Haldia by Shipping Corporation of India (SCI) Ltd. Steep rise in container movement at HDC, during 1989-90 and 1990-91, was on account of this. Modewise distribution of container traffic to and from HDC is given in Table 4.

Calcutta Port offers concessional rates for movement of containers between CDS and HDC. Even then movement of containers by Inland Water Transport (IWT) has not received adequate support by port users. However, increase coastal traffic handled by Calcutta Port by about 77% during the period 1983-84 to 1993-94 and maintenance of the increasing trend in 1994-95 indicate high potentiality of coastal traffic.

TABLE - 1 : COASTAL TRAFFIC HANDLED AT CALCUTTA PORT

(In '000 tonnes)

Year	Calcutta Dock System			Haldia Dock Complex		
	Coastal Traffic	Total Traffic	% Share of Coastal Traffic	Coastal Traffic	Total Traffic	% Share of Coastal Traffic
1983-84	1024	4088	25.0	2885	6380	45.2
1984-85	978	3988	24.5	2213	6536	33.9
1985-86	1180	4163	28.3	2545	7964	32.0
1986-87	998	4047	24.7	3056	8025	38.1
1987-88	1161	4393	26.4	3345	8678	38.5
1988-89	1190	4338	27.4	3663	9885	37.1
1989-90	1121	4339	25.8	3870	10350	37.4
1990-91	1303	4126	31.6	3565	11114	32.1
1991-92	1294	4157	31.1	3458	11843	29.2
1992-93	2023	5157	39.2	3931	13180	29.8
1993-94	1971	5169	38.1	4588	13327	34.4

TABLE - 2 : QUANTUM OF TRAFFIC HANDLED, WITH OVERSEAS/COASTAL BREAK-UP

(a) Calcutta Dock System

Years	Overseas		Coastal		Total
	Import	Export	In	Out	
1983-84	2376	697	579	445	4088
1984-85	2128	882	693	285	3988
1985-86	2249	734	912	268	4163
1986-87	2275	774	705	293	4047
1987-88	2564	668	951	210	4393
1988-89	2426	722	977	213	4338
1989-90	2442	776	943	178	4339
1990-91	2025	798	1137	166	4126
1991-92	1829	1034	1103	191	4157
1992-93	1875	1259	1802	221	5157
1993-94	1721	1477	1653	318	5169

TABLE - 2 : QUANTUM OF TRAFFIC HANDLED, WITH OVERSEAS/COASTAL BREAK-UP

(Contd.) **(b) Haldia Dock complex**

	Overseas		Coastal		
Years	**Import**	**Export**	**In**	**Out**	**Total**
1983-84	3407	88	585	2300	6380
1984-85	4244	79	3	2210	6536
1985-86	5330	89	29	2516	7964
1986-87	4879	90	333	2723	8025
1987-88	5153	180	168	3177	8678
1988-89	6119	103	173	3490	9885
1989-90	6259	221	112	3758	10350
1990-91	7341	208	103	3462	11114
1991-92	8296	89	25	3433	11843
1992-93	9142	107	95.5	3835.5	13180
1993-94	8540	199	303	4285	13327

TABLE - 3 : COMMODITY COMPOSITION OF COASTAL TRAFFICC AT CALCUTTA PORT

(a) Calcutta Dock System

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1. Total Coastal Traffic handled (In '000 tonnes)	1161	1190	1121	1303	1294	2023	1971
a) POL (Products)	802	846	805	961	946	1678	1577
b) Others	359	344	316	342	348	345	394
2. Total Cargo Traffic handled (in '000 tonnes)	4393	4338	4339	4126	4157	5157	5169
3. % share of Coastal Traffic in Total Traffic	26.43	27.43	25.84	31.58	31.13	39.23	38.13
4. Number of Coastal vessels handled	155	161	125	169	153	234	224

TABLE - 3 : COMMODITY COMPOSITION OF COASTAL TRAFFICC AT CALCUTTA PORT

(Contd.) **(b) Haldia Dock complex**

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1. Total Coastal Traffic handled (In '000 tonnes)	3345	3663	3870	3565	3458	3931	4588
a) Coal	2555	2933	3190	2868	2802	1969	3427
b) POL (Product)	606	526	410	410	415	636	771
c) Others	–	–	–	6	–	7	3
d) POL (Product) at Barge Jetties	184	204	270	281	141	316	387
2. Total Cargo Traffic Handled (in '000 tonnes)	8678	9885	10350	11114	11843	13180	133327
3. % share of Coastal Traffic in Total Traffic	38.55	37.06	37.39	37.08	29.20	29.83	34.43
4. Number of Coastal vessels handled	179	184	336	297	282	296	335

TABLE - 4 : MODEWISE DISTRIBUTION OF CONTAINER TAFFIC HANDLED AT HALDIA DOCK COMPLEX

Year	Number of TEUS moved by Inland Water Transport	Number of TEUS moved by Railways	Number of TEUS moved by Roadways	Total
1987-88	6	2910	10752	13668
1988-89	401	2310	111220	13831
1989-90	2019	3316	14198	19533
1990-91	2044	2376	15724	20144
1991-92	525	1808	4049	6382
1992-93	–	3018	5650	8668
1993-94	–	4055	4365	8420

INLAND CONTAINER DEPOT AT AMINGAON & EXPORT OF TEA

Indian is a major producer and consumer of Tea in the world (29% share). Total production of tea is about 758,063 tonnes per annum (1993). Tea production has been almost entirely in the traditional tea growing area of North Eastern States and South India. There are about 13,683 Tea Estates with 4,20,389 hectares under tea production in India. North India accounts for 3,39616 hectares. I.e. 74% of the total tea producing area. Of the 13,685 Tea Estates, North India accounts for 2,747 estates. North India contributes 578721 tonnes i.e., about 76% at india's total production of about 7.6 lakh tonnes.

Growth in exports of tea did not match with that of production. As a matter of fact four decades ago around the time of Independence, India was exporting around 176 million Kg. of tea in world market i.e., 70% of total production. The share dropped to 17% in 1992-93 despite increase of total production of tea by about 180% since independence. As a result, importance of tea as a foreign exchange earner has gone down significantly. Share of tea in total export earnings fell from 18.49% in 1960-61 to 1.98% in 1992-93. This was despite the fact that world consumption of tea have increased by 35% annually. The exports of Tea from India to various countries are shown in Table -1. Share of North-Indian Tea is given in Table -2

North Indian tea contributes a major share in the imports of U.K., Europe and Iran. Out of India's total exports of 29,781 tonnes to U.K. in 1992-93 the share of North Indian tea was 28,196 tonnes i.e. 95%. 100% of import of tea of Iran originate from Assam. Exports of North Indian tea to major tea importing countries are shown in Table -3.

Inland Container Depot (ICD) at Amingaon near Guwahati is the main dry port for routing tea traffic originating from Assam/ North Eastern States. ICD Amingaon came into operation in November 1985. Barring in 1981-82 and 1991-92, tea originating from ICD Amingaon is being exported via Calcutta Port (Haldia Dock Complex). In Table - 4, an attempt has been made to compare the traffic handled by different shipping lines operating from ICD Amingaon.

ICD at Amingaon accounts for 11% of tea exports of Assam. Amingaon has the following infrastructural facilities :

- Transit shed/covered area - 200000 sq.feet.
- The shed has an overhang enabling stuffing to carry on unhampered even during in monsoon.
- Railway sidings - 2
- Stacking yard - Paved area for stacking loaded & empty container.
- Working hours - 0930 to 1630 hrs.
- Workshop facilities - 50000 sq.ft. constructed by Assam State Warehousing Corporation
- Total warehouse space available - 45000 Sq. feet.
- Handling equipment (a) 2 mobile crane of capacity 18-30 mt (b) 6 forklifts - capacity 25 mt (c) 3 trailers
- Facilities for tea chests palletisation.
- Present capacity : 3000 TEUs per annum.

Due to political disturbances, production of tea in Assam region had gone down. There had been an acute shortage of empty containers for export load containers due to Government of India's strict import control. All the containers for export from ICD Amingaon have to be brought empty from Haldia, Calcutta or other Ports, which result in additional cost. Following withdrawal of main line vessels by the Shipping Corporation of India (SCI), there had been delay in shipment of containers ex-Haldia enroute U.K. or to Europe via Singapore. Other shipping lines do not have the requisite slot hire on their credit in connecting Mother vessel through Singapore. Due to political changes in USSR, now CIS, tea exports suffered a severe jolt.

ICD Amingao exports only tea, which is a seasonal crop. No import traffic from opposite direction are

handled. Therefore, the utilisation of capacity of this ICD is on lower side. Delay in clearance of contracts by Tea Board located at Calcutta also affect shipment through ICD Amingaon. Due to procedural delay, major shippers of tea originating in Assam viz Brooke Bond (India) Ltd., J.V. Gokal, Warren Tea Ltd., A. Tosh & sons, B.N. Kokis, Andrew Yule Co. etc. do not use ICD Amingaon. These Groups bring tea directly by road from the gardens to their local warehouses in Calcutta where the cargo is palletised for export through Calcutta. The major user of Amingaon are Willam Son Major, Assam company Ltd. Goodricke Group, Pary Agro Industries Ltd. etc.

During 1994-95, ICD Amingoan handled 2186 TEUs with tea ex-HDC against 1718 TEUs during 1993-94. Share of Shippping Corporation of India (SCI) in number of containers of ICD Amingaon was around 36% and that of P & O container Ltd. was about 45% during 1994-95.

The traffic originating from the ICD Amingaon sometimes get diverted to other parts. Two rakes of tea (160 TEUs) destined for U.K. and Europe had been diverted from Haldia to Bombay during 1991-92. Reportedly non-availability of required slots in the connecting Mother vessels from Singapore appear to have encouraged this move. The problem of getting slots had became acute after withdrawl of mainline vessels by SCI from Haldia to U.K./Continent in 1992. The problem of repositioning of empty containers have however been resolved.

To overcome the difficulties about capacity utilisation, necessary action from all concerns viz Ministry of Railway, SCI, CONCOR, IWI etc. need to be taken.

(Based partially on information with the Port)

TABLE - 1 : EXPORT OF TEA FROM INDIA (MAJOR COUNTRIES)
(in '000 Kg)

Countries	1989-90	1990-91	1991-92	1992-93
U.K.	21663	21840	24151	29781
USSR/CIS	121872	112848	107594	58175
Ireland	1991	1969	2636	2523
Germany	3930	4231	5132	6024
Poland	2769	9083	11617	14933
Iran	17346	11048	17564	17021
Japan	3868	2656	1742	2936
USA	1505	1483	2186	3157
UAE	4222	5560	6936	5444
Australia	451	455	808	726
Other Countries	30998	27067	34797	38230
Total	210615	198240	215166	178950

TABLE - 2 : SHARE OF NORTH INDIAN TEA IN TOTAL EXPORTS
(in '000 tonnes)

Year	Export of North India Tea	Total Export	% share of North Indian Tea in Total Export
1989-90	167	211	79
1990-91	161	198	81
1991-92	161	215	75
1992-93	138	179	77

TABLE - 3 : MAJOR IMPORTERS OF NORTH INDIAN TEA

(in '000 Kg)

Countries	1989-90	1990-91	1991-92	1992-93
U.K.	20766	20807	22212	28196
Ireland	1991	1969	2573	2483
Germany	3805	3907	4703	4863
USSR/CIS	89011	84334	68575	40387
Poland	2749	8072	7536	8813
Iran	16735	11048	17564	17021
Japan	3237	2107	1317	2025
Other countries	29187	28691	36149	33734
Total	167481	160935	160629	13752

TABLE - 4 : SHIPPING LINE WISE TRAFFIC HANDLED AT ICD AMINGAON

Line Name	(No. of TEUs)					
	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
1. Shipping Corporation of India Ltd	1087	642	773	908	814	793
2. P and O containers Ltd.	152	217	491	560	605	991
3. DSR SENATOR Line	435	240	100	–	90	95
4. Hapag Lloyd	–	10	–	–	–	–
5. Yang Ming Lines	–	80	–	–	–	–
6. Ceylon Shipping Corporation	–	–	–	146	176	80
7. Maersk Line Ltd.	–	–	–	–	8	126
8. Contship Line	–	–	–	–	–	96
9. Others	–	–	–	–	25	5
TOTAL	1674	1189	1364	1614	1718	2186

83. Machinery in Heavy Lift

84. Container Handling

MARKETING MIX FOR CALCUTTA PORT

S.K. Mondal & T.K. Banerjee

Marketing by ports demands an understanding of services offered, price charged, choice of location and manner of promotion. The service is what is offered to the users. Calcutta Port provides the following services to its users : (a) Pilotage/Towage over a stretch of 232 Km in the navigational channel, (b) Berths/Quays facilities, (c) Stevadoring, (d) Storage of cargo, (e) Cargo handling equipment, (f) Container Terminal facilities, (g) Estate, Bunkering, Dry docking etc.

There are 32 berths in Calcutta Dock System (CDS) & 9 berths in Haldia Dock Complex (HDC). Calcutta Port collects berth hire, pilotage charges, towage charges and port dues from the steamer agents or vessel owners and wharfage on cargo from the importer or exporter as per specified rates published in the Scale of Rates. Demurrage is realised for storage of cargo beyond certain stipulated free period. All such areas do admit improvement. For delivering better services to the port users a few measures could be adopted. Some are mentioned below.

Documentation system at Calcutta is too cumbersome. For filing of Import/Export Documents, challans, getting Customs Apprisement and remitting the freight to shippers/exporters through bank, the clearing agents have to move between many windows. Delay in every point leads to detention of cargo. One of the complaints and grievances of Nepal Clearing Agents is that they have to offer speed money at every point/stage of movement of cargo/containers. Insistence of customs to move most of the commodities in container trucks to Nepal also leads to detention of such cargo. These factors have partly prompted Government of Nepal to have an alternate entry through Port of Chittagong. If CPT could develop a single window documentation facility and reduce the number of documents and the points of their endorsement, then the threat of traffic diversion could be contained. It would also make the port look helpful.

Waiting period of goods vehicles inside and outside dock area as also of the ships at berth may be reduced to regain the confidence of the users of the port. Security of the cargo during stay in the port as well as during transfer to the destinations may be enhanced by strengthening the relevant organisations.

Cargo handling equipment should be well maintained. Overhauling/maintenance should be done as per stipulated time interval. Delay in landing/lifting for want of equipment may affect adversely the credibility of the port.

To keep at par with the global technological improvement in the field of inter-modal transportation, Calcutta Port was the first in the country to develop modern container handling facilities. A container terminal with container freight station was commissioned at HDC in 1977. To keep pace with time, a modern Container Terminal has been built at 7 Netaji Dock. The annual projected through-put of the terminal is 75,000 TEUs. The container park and adjoining facilities are supported by modern container handling equipment. The terminal has an on-line computer support system. To serve the port users in a better way, CPT may think of introducing the system of door-to-door service. For developing that infrastructure CPT may take assistance of private sector firms.

For transportation of containers, the Indian Railways play an important role. Calcutta and Haldia is linked with Inland Container Depots at Amingaon (Guwahati), Pragati Maidan and Tughlakabad (New Delhi), etc. However, the linkage with the Container Terminal of Calcutta itself has not been established. CPT may take proper initiative in this respect.

Calcutta Port is connected by road, rail and inland water transport facilities with its hinterland. For offering better services to the customers CPT may consider adopting the following measures :

(i) Roads in the Dock area should be strengthened to bear heavy loads.

(ii) Reliability and credibility of Port railway

system at CDS has lost during the last two decades mainly due to absence of any maintenance of railway tracks and failure to supply locomotives. Since no modern port can function properly without an operating railway system, special emphasis should be given to effective maintenance.

(iii) Inland Waterways system, which is already functioning, should be more intensively used and extended up to Allahabad.,

Calcutta Port's resources in real estate measures about 3,326 acres at CDS and 6,678 acres at HDC. To utilise this resources, CPT may create warehouse for Import/Export commodities, Container Depots, Processing Units, port based industries, etc.

II

Charges are levied on the various services offered by the port authority. The charges are notified through "scale of rates" published in the gazette from time to time or through "resolutions" approved by the Board of Trustees. The salient charges are : (i) Wharfage on heavy lift/non-heavy lift cargoes (ii) Demurrage (iii) Loading/Unloading/Re-stacking (iv) Miscellaneous (v) Consolidated (vi) Inland Vessel wharf (vii) Container charges (viii) Vessel charges (Berth hire) (ix) Towage/ Pilotage and (x) Port dues etc.

It is difficult to decide on proper port-pricing. It is often claimed that by reducing port charges/tariffs more number of port users would be attracted. The issue is not so simple. The various components of transport costs of some commodities passing through Calcutta Port are given in Table-1. It shows that the cost incurred towards port charges accounts for 1-4 per cent of the total transport cost. Within such a reality reduction of port tariff of a particular commodity in Calcutta may not yield any revolutionary result.

Analysis of traffic between ports reveal further complexities for decision marketing on port pricing. For example, the present wharfage on log traffic is Rs. 160/- and if the charge is reduced by Rs.60/- per tonne, Calcutta Port will loose Rs. 41 lakh per annum. However, log-traffic is in the decline in every Indian Port. The reasons for decline is, perhaps, due to change in export policy of the log exporting countries, arising from apprehension of ecological imbalance, and not due to any preference for ports other than Calcutta. By reducing the charges on this traffic, in CPT will only incur loss of revenue. The second example is given by tea. The volume of tea trade has not increased significantly in any port. The reason for this may be due to phenomenal rise in domestic consumption. Reduction of 0.1% ad-valorum as tariff charge at Calcutta may only lead to a loss of about Rs. 27 lakh per annum.

Other extraneous factors also need consideration, For example, carpet shipped from Calcutta comes from Nepal and Bhutan. The high value Benaras (U.P.) carpet shipped through Calcutta a few years ago used to fetch revenue to the tune of Rs. 30 Lakh per annum. It has now shifted to Bombay mainly due to imposition of entry tax by Government of West Bengal, harassment of lorries at the entry-tax check-posts and wider shipping links at Bombay. Previously the marine products originating from Puri-Bhubaneswar region of Orissa used to be exported through Calcutta. This traffic is now moving through Paradip and Vishakhapatnam arising from lowering of inland transport cost between the producing region and those ports in comparison to Calcutta. Even if Calcutta Port does not at all levy any port charges, it is unlikely to get back this traffic.

All these examples suggest that decisions on pricing would require comprehensive analysis of many factors. Pricing rate and structure should be framed against such studies and amended as and when the situation demands. Instead of running after the lost traffic, the port should lay emphasis and endeavour to catch the petroleum oil traffic for Barauni and to retain the traffic of Nepal and Bhutan. If necessary, restructuring of the rates may be adopted.

III

Actions on other areas can be taken with greater care. For example, it is important to make the products available to the user by reducing the transhipment time between supplier and user locations. The concept of door-to-door service, which is in vogue in the railways, may be considered as adoptable by the port.

Then comes the issue of promoting the port. The objective is to make a segment of the demand sustaining population aware of the available services at a port and to persuade them to avail those. In the port sector, the advantages of advertisement is locationally confined. Producers of exportable goods form Bombay region may not avail the facilities at Calcutta port.

Advertisement for Calcutta Port in Bombay will have little impact on them. However, making a shipping agent sensitive to the comparative advantages may prove useful if the products for export originate closer to Calcutta than Bombay.

Public relations is another instrument for promotion. It does not entail merely to put up a smiling face to a client who has already called. It involves evaluation of public attitudes and public policies, identification of public interest groups with a view to mobilise them to secure advantages for the port. It should be pursued as a deliberate, planned and sustained effort. The objective is to establish and maintain mutual understanding between the port and its users. Although these tools are used by CPT, the basic strategy planning has remained unformulated. This needs attention.

One may admit that public relation becomes effective through dissimination of news in trade oriented newspapers. Existing Port journals may be restructured to make those trade oriented. Periodic conferences by Port Chairman with the press, representatives of Trade & Commerce, Chamber of Commerce, telecast of video cassettes, etc. are likely to impress and attract the potential users of the port.

The port may also consider deployment of cargo agents as means for promotion of trade. The first step in this regard may be the creation of a Department of Marketing within CPT. To staff it with professionals and to sensitize the other departments about marketing could then be seen as agenda for management by objective.

TABLE - 1 : COMPONENTS OF TRANSPORT COST OF SELECTED COMMODITIES

Commodity	Freight on sea	Inland Transport cost Rail & Road & IWT	Cargo handling expenses	Port Charges	Total Charges	Port Charges as % of total cost
Carpet	6680	600	Rs. 655+50 (THC, C&F etc.)	100	8013	1.2 %
Tea	3507	362	600	200 MT	4669	4.3 %
Steel	3507	500	250	100	4357	3.3 %
Jute	2600	340	250	100	3290	3.0 %
General Cargo	6481	600	550	100	7731	1.3 %

85. Silo in Kidderpore Dock

86. 200 MT Crane

CALCUTTA PORT
A PERSPECTIVE OF DEVELOPMENT

Bikram Sarkar

The uniqueness of Calcutta Port does not lie in its contribution to the birth of one of the oldest cities of India or in its location on a river, or in its distinguished service to neighbouring land locked countries. It is the only Port in India which unfolds the varied saga of challenges emerging from the macro - environment and the response of the port system thereto. The impact of these forces have caused the old riverine jetties to give way to an impounded dock system at Calcutta and thereafter to a modern cargo handling complex at Haldia. Contraction, consolidation, transformation, relocation alongwith new construction and development have always been the hallmark of this 'never say die' port. The march to 'Sea' continues.

That the Port is not amongst the top notchers in volume of cargo traffic handled is known. What is hardly perceived is the fact that amongst Indian Major Ports, in respect of total income and vessel calls, this port is ranked second. Value of cargo handled is third highest in this port and it ranks first in the rate of reduction of manpower during the last decade.

The principal global changes impinging on the ports from their macro-environment in recent times may be summarised as follows :

(a) Technical : Increase in ship size, speed, specialisation with consequent demand for higher draft, reduced waiting time of ships in Ports, improved capital intensive facilities with displacement of labour.

(b) Economic : Increasing trend to open up economy, more possibility of foreign investment/aid and mounting pressure to streamline legal regime, standards, documentation, tariffs, systems and procedures and consolidation of transportation chain through amalgamation of different modes of transport agencies and carriers linked by improved communication and stressing on development of a few ports as nodes towards which cargo may gravitate.

(c) Political : Balkanisation of USSR, marginalisation of Socialist Bloc with bilateral trade paling into insignificance, emergence of South Africa and new countries etc.

Upto 1954-55 Calcutta Port was the premier Port of India. As against 21.8 m tonnes (MT) of total traffic passing through all the Major Ports in the Country, Calcutta Port handled 7.9 MT. In 1964-65 all India traffic was 48.2 MT of which Calcutta accounted for only 11.1 MT. In 1974-75 the all India traffic was 66.2 MT of which Calcutta Port's share was only 8 MT. This was despite the emergence of Haldia Dock Complex (HDC) as an integral part of Calcutta Port. This period also witnessed the emergence of Ports of New Mangalore, Paradip and Tuticorin. In 1984-85 the position partially improved with Calcutta Port handling 10.5 MT. In recent years however there has been welcome turnaround as in 1993-94 Calcutta Port handled 18.46 MT.

Container traffic has also exhibited considerable buoyancy during this period increasing from 38,897 (twenty foot equivalent units) to more than 1 lakh TEUs in 1993-94. Especially significant has been the growth of traffic relating to Petroleum Crude and Products which increased from 5.1 MT in 1984-85 to 8.7 MT in 1993-94; and that of Coking Coal and Thermal Coal increasing from 0.036 MT and 1.66 MT to 2 MT and 3.4 MT respectively.

The envisaged revised 8th Five year Plan outlay of Calcutta Port is Rs. 250 crores with Rs. 88 crores (approx) and Rs. 143 crores (approx) being earmarked for CDS and HDC, the balance being accounted for by river related works. The objective is to match the requirements of shippers and importers by reducing cost, improving service, selectively modernising and encouraging private sector and user's participation. Stress is being laid on accelerating the growth of container traffic, thermal coal, coking coal and other dry-bulk cargo, capturing larger share of Petroleum Crude and Products and new emerging traffic of LPG

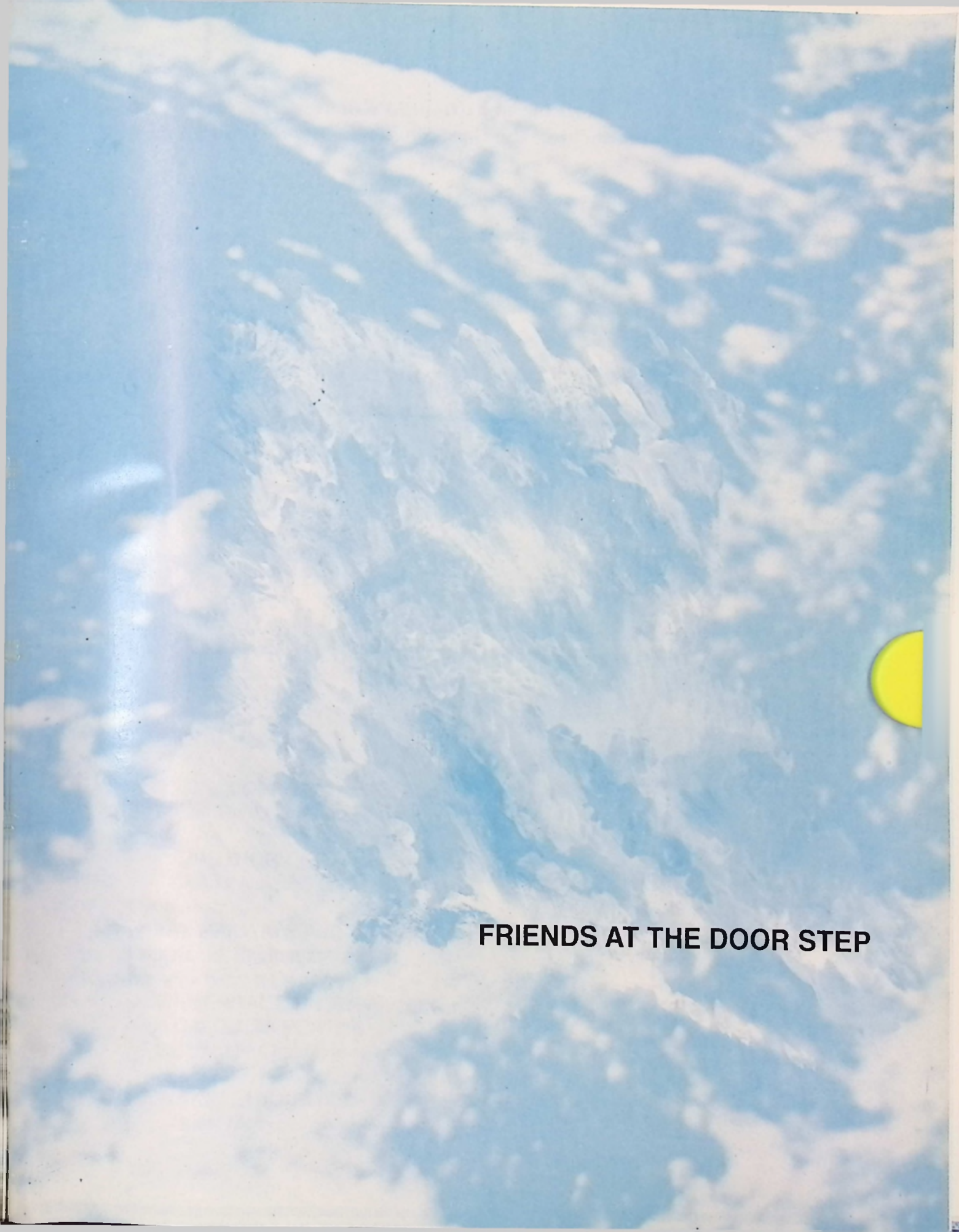
and other liquid cargo etc. and consolidating the distinctive competence of handling break-bulk and project cargo. Waiting time of ships for berths and in Port are sought to be reduced through development of requisite facilities, while emphasising on privatisation, environmental upgradation and better aggregation/ dispersal of cargo.

It is expected that Calcutta Port will be handling around 25 MT by 2000 AD as against the current level of 18.5 MT, the increase occurring primarily in Petroleum and related products, Coal, Coking Coal and Containers.

Opportunities are many. Contemplated development of pipeline from Haldia for feeding POL (Crude) to Barauni, development of ship repair facility at Haldia, Haldia Petrochemical Complex project — all augur well for the port. Dedicated utilisation of specified berths at HDC by SAIL and TISCO and leasing of NS Dry Docks at Calcutta Dock System reflects the new found trust in the investment climate of the port.

Whether this port shall grow and prosper shall be largely governed by the degree of success with which national and regional plans get dovetailed in future with the Port's development plans. The search for excellence may need to cover the entire gamut of options — development of maritime growth centres, adequate transport linkages and nodes, requisite policy - intervention and support in the key areas of cargo routing-transport modes, river related aspects and estate development for generating surplus fund as an 'engine of growth' of the Port. Effectiveness of the institutional mechanisms and quality of commitment of decision makers would be the key to success. Growth is possible only if the Port and the elite-providers of service unitedly bring down their cost and pass on the benefits to customers, exporters and importers.

We are confident that the occasion of celebration of 125th year of this resilient Port shall be used to develop such a programme.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ASIAN DEVELOPMENT BANK AND INDIAN PORTS

Mitsuo Sato

At the outset, on behalf of the Asian Development Bank, I would like to express our thanks and appreciation to the Calcutta Port Trust for inviting the Bank to participate in the commemoration of the 125 years of the Port's existence.

Historically, ports have always been the poles of international commerce and trade and have often been intimately linked with the growth and importance of many cities and city states. The Port of Calcutta, which began as a naval base to protect the interests of the British in the 19th century, rapidly developed into a very important trading post for the commercial and industrial complex that grew around it. I take this opportunity to congratulate the Calcutta Port Trust on this momentous occasion of its 125th Birth Anniversary and on its long and colorful history over these years. The Port can rightly pride itself of the role it has played in shaping the Indian economy from the early years of its existence as the Gateway Port of the British Empire during the colonial days right through to the post independence period. Calcutta's pre-eminence as the industrial hub of India during the early years after independence is owed largely to its vibrant port. Ports are basically interface points in the overall transportation chain. Many a national economy is dominated by the performance of a single port, as in Hong Kong or Singapore, and the competitiveness of the country's trade often depends on the efficiency of its ports such as in Netherlands, especially when the country's economy is heavily weighed by international trade.

Maritime transport is an important aspect of trade and transport of most countries and ports play a very significant role in the regional as well as national economies. Over the past three decades, the importance of sea transportation has increased even further. This has been mainly due to changes in ship sizes and cargo handling technology, especially the containerization of break bulk and general cargo. The increased costs of building and operating large and specialized vessels have made fast turn-around of vessels in ports an imperative, which, in turn, has triggered the development of highly efficient cargo handling systems. Maritime transportation has thus become significantly time-sensitive, and ports that are unable to provide a level of service commensurate with the demands of modern shipping are in the danger of losing their markets, irrespective of the physical infrastructure provided. Moreover, inefficient port operations will adversely affect both export and import costs and seriously erode the competitive base of a country, which is so important in today's global economy dominated by international trade.

Many ports in the majority of the Bank's developing member countries face the same operational problems, namely low performance or output in cargo operations, high operating costs, and poor reliability of services. These problems threaten not only to affect adversely the competitive edge in trade, but also to inhibit the prospect of attracting private investments into the port sector.

Specifically, the problems in port operations are related to (i) dual control on cargo handling labour (dock and port labour being separate) leading to a lack of efficient organization and planning of cargo operations; (ii) outdated and inefficient cargo handling techniques and practices geared more to manual handling and less to the use of mechanical cargo handling equipment; (iii) absence of separate terminals concept for different groups of commodities by which all specialized operations specific to the commodity group could be integrated into one area of the port; (iv) lack of a modern integrated management information system that is so essential for pro-active management; (v) lack of a modern scientific equipment maintenance management program which has led to persistent problems of high equipment down times and non-availability of essential spares; and (vi) excessive documentation and governmental controls (for, example customs) that hamper smooth, speedy operations. Compounding these problems are the inappropriate management structures in many ports whereby much of the authority is retained

at the governmental levels and the ports are mostly operated as noncommercial entities with little incentive for competition and efficiency.

The Bank is concerned about the urgent need to achieve parity with internationally recognized performance standards in the performance and productivity levels at some of the ports in the region's developing member countries. The Bank recognizes that the reason for this present situation is not merely the lack of adequate and timely investments in port infrastructure but, more importantly, the absence of an appropriate policy framework and institutional arrangements that would encourage competition and efficiency in port management and operations.

India is rapidly becoming aware of its transportation infrastructure inadequacies, especially in view of its recent attempts to globalize its economy. It is now realized that the long term growth prospects for the Indian economy are very dependent on satisfactorily resolving the existing and anticipated capacity constraints in the nations transport network. Especially in the port sector the present throughput capacity of 175 million tons in the 11 major ports will fall short of the expected demand of over 300 million tons by the year 2000. The investment requirements for meeting this demand are considerable. Therefore, the strategy should be focused on maximizing existing capacity through more efficient operations and creating the appropriate environment to attract private investment and interests in as many port operations as possible.

Since its inception, the Bank has been actively involved in the development of the region's ports. As of December 1994, the Bank had provided about $1.4 billion in loans to 48 projects in 20 developing countries. In addition, the Bank has assisted, through technical assistance, in feasibility studies, project preparation, and detailed engineering for several port projects as well as in operational and management training of port officials. Over the years, the Bank has disbursed nearly $23 million for such technical assistance in the ports sector.

The Bank's involvement in the ports sector in India dates back to 1987. The Ports Development Project was the Bank's first loan to India in the transportation sector and included the provision of container handling facilities and equipment and the development of computerized container traffic control systems in the ports of Calcutta, Madras, and Cochin. These facilities have helped these ports to modernize their container terminals. Subsequently, the Bank provided two more loans: the Second Ports Project for improvements in the port of Bombay and developing a deepwater port in Kakinada; and the Coal Ports Project, involving provision of coal handling facilities at Paradip Port, and development of a new port at Ennore, near Madras. In addition, the Bank has been involved, through technical assistance grants, in sector related studies such as the ports and shipping sector study and the development of ship repair facilities and policy reforms in the ports and shipping sector. Presently, the Bank is considering yet another loan to rehabilitate and modernize the port facilities in Bombay, Madras and Mormugao. All in all, the Bank has so far provided nearly $500 million in loans to Indian ports.

The Bank takes particular pride in its involvement in the development of the port sector in India. And especially so of Calcutta port because the Bank's first ports development project in India, which ushered in the era of containerization in a big way in three of Indias major ports, including Calcutta port. With the help of Bank assistance Calcutta port completely revamped its old general cargo berths in the Netaji Subhas Docks, equipped it with modern container handling cranes, installed a computerized container tracking system and operationalized the facility as a dedicated container terminal that has benefited the trade enormously. The Bank is particularly proud of the achievement of Calcutta Port in this regard.

UNCTAD AND INDIAN PORTS

Bala K. Subramaniam

Calcutta Port has been the premier port of the Indian sub-continent since its formation in the year 1870. Calcutta Port has served the capital of British India as the gateway to trade and its links with the outside world. Subsequently it serves not only the hinterland of the states of independent India comprising of Northeastern, Eastern and Northern states but also the neighboring landlocked countries of Nepal and Bhutan. With the advent of through transportation, Calcutta Port forms an important link in the multimodal transport chain of the hinterland it serves.

With the establishment of the World Trade Organization (WTO), previously known as GATT, rapid changes are taking place not only in the quantum increase of world trade but also the way in which trade is conducted. Due to the introduction of technological innovations in communications, the world has become a global village reducing distances through instant communications. Hence business partners world over expect fast decision making in trade transactions and reduced delivery time for the goods ordered. The whole process of trade and transport logistics demand fast movement and clearance of goods. Ports as a key link in the through transport chain play an important part in this system.

UNCTAD and the UN European Commission for Europe (UN/ECE) have been working towards simplification and harmonization of trade procedures and documentation and the introduction of Electronic Data Interchange (EDI). UN/ECE has been responsible for the establishment of the internationally accepted standards for EDI called UN/EDIFACT. UNCTAD through its Special Programme on Trade Efficiency (SPTE) has developed and implemented the Automated System for Customs Data ASYCUDA. UNCTADs SPTE has started its new initiative in the promotion and establishment of Trade Points, which are business centres in a single place facilitating all aspects of international trade. UNCTAD and ESCAP are fully committed to promoting economic cooperation between developing countries of the region.

With the implementation of the Uruguay round agreement, barriers to trade are being removed, giving India an opportunity to expand its foreign trade. This along with the liberalization programme launched by the Government of India has seen an annual increase of over 16% in imports and exports.This trend is expected to continue for the next decade. With over 95% of Indias foreign trade carried by sea, Indian ports are expected to see a continuous increase in throughput. Additional capacity can be created over time, but in the immediate future it will be necessary to cater for this increase in demand through improved productivity and efficiency of operations. Towards achieving this goal the Calcutta Port Trust has invited the participation of the private sector in port operations.

A number of specialized berths have been licensed for private sector participation. Training plays an important part in this effort. The Calcutta Port, through its Port Training Institute in Garden Reach and with the assistance of the NIPM and IIPM, has, with the objective of improving efficiency, been training its officers and workers.

Calcutta port is strategically placed as a gateway not only to the eastern and north-eastern states of India, but also to Nepal, Bhutan and possibly Bangladesh in the future. With growth (GDP rates predicted at over 6% per annum) Calcutta port will pay an important part in servicing international trade and development of the country. Calcutta port has recorded growth of over 15% last year, which is more than most Indian ports. During a recent emergency import of sugar, an essential commodity, Calcutta Port efficiently handled over 50,000 tonnes in record time. Calcutta Ports Haldia Dock complex handles most of the thermal coal required for the power stations of the southern states. The industries of the southern states through the southern grid rely on power for its operations and this is critical for sustaining industries in these states. The Haldia Dock Complex of the CPT handled this coal efficiently with minimum delay to vessels.

In container traffic Calcutta port is ranked fourth amongst Indian ports. With the rapid introduction of multimodal transport it is expected that this will increase considerably. Container traffic from Nepal is also expected to increase considerably when the Inland Container Depot (ICD) at Birganj in Nepal is completed. This project with assistance from the World Bank is expected to be completed by 1996. It is expected that block container trains will be run regularly by the Container Corporation of India (CONCOR) between ICD Birganj and the Haldia Dock Complex of the Calcutta Port. It could also be possible for some through containerised cargoes from Bangladesh to be routed via Calcutta Port.

The United Nations and its agencies have been involved with the Calcutta Port through various technical assistance programmes for a number of years. The United Nations Conference on Trade and Development (UNCTAD), the Economic and Social Council for Asia and the Pacific (ESCAP), International Labor Office (ILO) and the International maritime Organization (IMO) are some of the UN bodies that have had fruitful associations with the Calcutta Port.

The UNCTAD established by the General Assembly of the United Nations through the Economic and Social Council has amongst its mandate the promotion of trade and development of developing and newly emerging member states of the United Nations. A number of officials of the Calcutta Port have worked and excelled as field experts in UNCTAD and ILO executed projects worldwide. UNCTAD has had a close association with Calcutta Port in the execution of a number of technical assistance programmes. For, example a number of officers of CPT participated in the UNCTAD/Swedish International Development Authority (SIDA) workshops on Port Operations and Development. Subsequently, CPT officers delivered UNCTAD/SIDA's Improving Port Performance course (IPP 1) a number of times at Calcutta.

The establishment in 1981 of the regional UNDP/ UNCTAD project, Training Development in Maritime Transport (TRAINMAR) resulted in a number of cooperative efforts between UNCTAD and CPT. The first contact was made with the CPT training center run by the Chief Mechanical Engineer's department with the personal involvement of the Chief Mechanical Engineer. With the assistance of this training center the training of port officers not only in India but also in the Asia and the Pacific region was started. This close association with the CPT training center continued when it subsequently became the Indian Institute of Port Management (IIPM).

UNCTAD has been playing an important role in the improvement of efficiency of Indian Ports through its human resources development and other technical assistance projects. Assistance in the Indian ports sector has primarily been in the areas of training through the TRAINMAR programme, conducting seminars and workshops and, in general, facilitating human resources development. This has been undertaken through a multipronged approach of developing requisite training materials in a standard manner drawn from the experience gained across countries from its worldwide network of TRAINMAR centers and making it available along with the resources of trainers from the Network resulting in transfer of know-how and training technology enabling training to take its roots in the maritime sector of India. Some of the areas where UNCTAD has recently played a key role in the development of training materials are Port Planning, Improving Port Performance (IPP), Training for Port Supervisors, Maintenance of Equipment, Multimodal Transport and Training for Trainers and Course Developers.

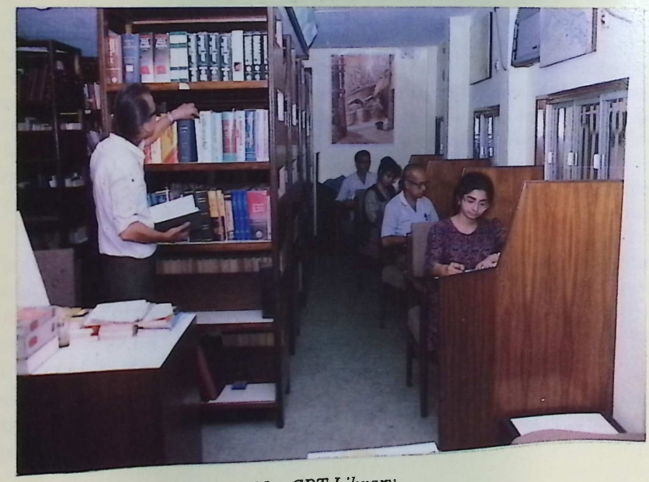
Local trainers after being trained in their respective areas continued this effort by imparting training in India and assisted other countries of the Network to benefit from their experience. UNCTAD continues to concentrate its efforts in the region by providing assistance not only in the area of training but also in helping key decision makers in identifying problems and arriving at suitable non-training solutions to improve efficiency. In this context it is worth mentioning the pilot project of a task force identifying non-training problems and finding solutions to the same at a general cargo berth at the Madras Port Trust. This pilot project is entirely the effort of the Ministry of Surface Transport and the Madras Port Trust and its experience is being monitored by UNCTAD as part of the UNCTAD/ILO regional UNDP project for the Decade of Transport for Asia and the Pacific (Ph II).

Through a technical assistance project financed by the United Nations Development Programme (UNDP),

UNCTAD assisted the Government of India in the establishment of the National Institute of Port Management (NIPM) at Madras. A number of Calcutta Port officers played an important role in the formulation stage of this institution. Calcutta Port officers continue to participate in programmes run by this institution.

Calcutta Port has covered a lot of ground during its journey over these 125 years. With the common mission of achieving excellence and serving India and the region, we look forward to continue this cooperative effort. We wish the workers and officers of the Calcutta Port well in all their endeavours.

87. Passenger Terminal



88. CPT Library

ESCAP AND CALCUTTA PORT

M. Rahmatullah

The Calcutta Port Trust has proudly served as the maritime trade gateway for Indias eastern region over the past 125 years and carved its own special place in the history of India. In addition and importantly, it has fulfilled the vital function of transit port for the kingdoms of Nepal and Bhutan, giving these landlocked countries essential access to international maritime traffic routes. On this special and auspicious occasion we wish to extend our warmest congratulations and best wishes for the future success of the Port Trust.

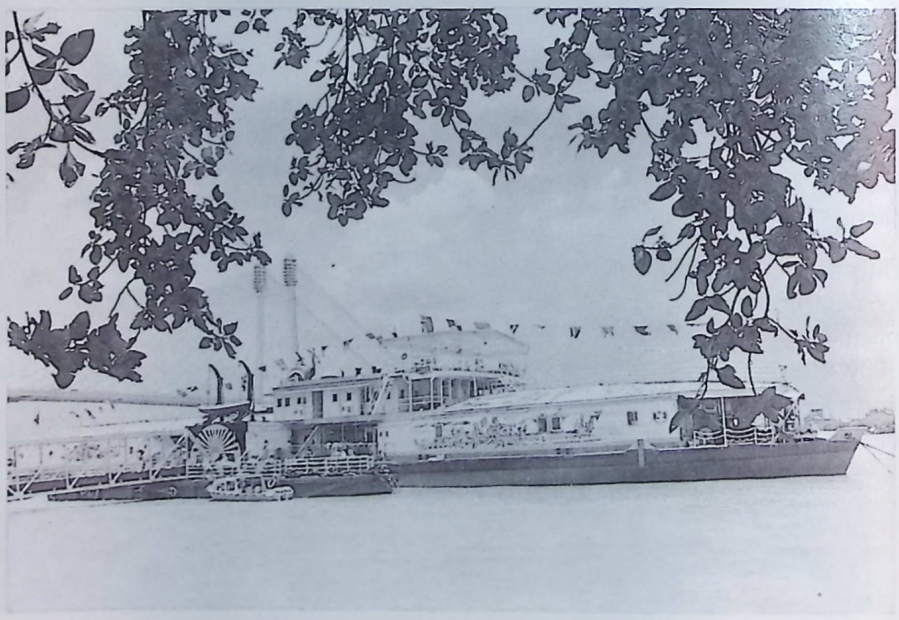
The Transport and Communications Division of the Economic and Social Commission for Asia and the Pacific (ESCAP) has had a long and successful relationship with Calcutta Port Trust. I would think that the international expertise that ESCAP has brought to Calcutta through activities convened in conjunction with the Port, on subjects such as containerization, tariff formulation, maritime strategy, port capacity, statistics and multimodal transport, have all contributed to the advancement of the port and particularly the development of its human resources which are essential to efficient management and operation of the given facilities. I am pleased to say that the relationship has not just been a one way process. The participation and contribution of Calcutta Port Trust personnel within ESCAP's international seminars and workshops have resulted in an exchange of ideas and experiences useful to ports across the ESCAP region.

Recently the Government of India have declared sweeping new policies aimed at speedier economic development through liberalization of economic and trade policy. Calcutta Port Trust has done its part in supporting these initiatives by handling additional traffic and setting new records for cargo throughput, culminating in the handling 18.5 million tonnes last year. This achievement was reflected with the ports rank, climbing higher amongst the major ports of India, conjuring up images of a return to the ports glorious history when it was the first among all ports of India.

Even with this recent laudable progress much still remains to be done to further improve productivity and efficiency, upgrade services and reduce costs. Only when these goals have been achieved will the Port be fulfilling its potential role as engine of growth, by encouraging and supporting local industry in competing more effectively in the international marketplace. We at ESCAP are confident that Calcutta Port Trust will be successful in overcoming the challenges in achieving these goals through the implementation of new initiatives and further investment in facilities, equipment and especially human resources development.

Our confidence in the future success of Calcutta Port Trust is reflected in projections we have made for container traffic growth, using the ESCAP/UNDP Maritime Policy Planning Models. These show that over the next five years the number of containers passing through Calcutta Port Trust and Haldia Dock Complex is likely to double, reaching an annual throughput in excess of 200,000 TEU by the end of the century. Similar patterns of rapid growth are also anticipated in many of the other areas of the port. As the port facilities further evolve and grow to become a major container feeder port and bulk handling facility, we will see Calcutta consolidates its position as the cornerstone of economic development in the eastern region of India and thereby further add to the glorious history of Calcutta Port Trust.

89. Old Age Home of CPT



90. Maritime Museum

SHIPPING CORPORATION OF INDIA AND CALCUTTA PORT

P. P. Radhakrishnan

The demand for shipping service is a derived one similar to the services offered by a port. Growth of both shipping and port are directly dependant on the growth of trade and movement of commodities to and from a particular region. Industrial growth and consequential export and import generates movement of cargo and then only do port and shipping come into being. The national carrier, the Shipping Corporation of India (SCI) has had its presence in this region since its inception and has been catering to trade to and from this region.

Without delving into the past we all know that Calcutta was the first capital of British India and trade under the British Government flourished in the region with Calcutta being the centre. Calcutta had the privilege of having first liner conference known as Calcutta Liner Conference. Till 1954-55 Calcutta continued to be the biggest port in the country and Bombay was in second position. When the break-bulk mode of transport was at its zenith, Calcutta port used to be full of ships from Matiabruz to Calcutta Jetties through Hastings Moorings, etc. in addition to both Kidderpore and Netaji Subhas Docks. As the volume of bulk cargo was increased and more and more cargo got containerised new exclusive container terminal was made at Haldia. Because of the advent of large bulk movement and containerisation of general cargo the number of ships calling Calcutta has come down.

The era of containerisation began in the mid 70s and Calcutta port has adapted to the emerging requirement. In fact, Calcutta had the first exclusive Container Terminal in the country at Haldia in 1977 and Calcutta port now handles more than 1,00,000 TEUs per annum. This was possible by virtue of CPTs involvement in developing the infrastructure by way of building up a full-fledged container terminal in NSD in 1992. With the increase in containerisation, the facilities for trade have developed and container freight stations have come up around Calcutta. The Multimodal Transport Act has also come into being which would give a fillip to the trade from the region. The SCI is the first Multimodal Operator in the country and is involved in carriage of containerised cargo from ICDs and CFSs in the region and in arranging door to door delivery of cargo to inland destinations even in landlocked neighbouring countries like Nepal and Bhutan for which Calcutta is the gateway port.

To meet the requirement of the containerised trade SCI acquired three cellular container vessels of 1869 TEUs capacity during the period December, 1993 and January, 1994. These vessels have been deployed on the India-UK-Continent route and containers from Calcutta and Haldia are being feedered to Colombo to connect to mainline vessels. Calcutta and Haldia can serve only as feeder ports. With about 37 foreign lines including some mega container operators serving Calcutta port, SCI is the only Indian line at the port and caters to about 20% of the total containerised liner cargo to Europe, which is the highest as an individual line.

Apart from a strong presence on the liner trade, SCI is also fully involved in transportation of crude and petroleum products through Haldia and Budge Budge. SCI virtually carries 100% of the crude for Haldia Oil Refinery which presently has a refining capacity of 3 million tons per annum. An additional oil jetty has come up at Haldia and Haldia Oil Jetty has now a potential of handling 6 million tons of crude oil with additional potential for handling of petroleum products. The SCI caters to the bulk of the crude oil movement in the country and operates an integrated crude oil transportation system. A significant achievement has been the berthing of a Suez max tanker of about 1,39,000 dwt capacity at Haldia Oil Jetty for the first time with the combined efforts of CPT and SCI, which will increase crude through-put to Haldia.

Coking coal for steel plants in the region is being imported through Haldia and there is a steady movement of about 3 million tons per annum and SCIs vessels are participating in this movement. Similarly, SCIs bulk carriers are also involved in carriage of thermal coal. The carriage of coking coal and thermal coal from Haldia is going to be a continuous activity and SCI has definite proposals to remain in the fray.

Calcutta Port Trust since its inception has undertaken many difficult operations on break bulk vessels and has handled cargo right from heavy and bulky packages to superfine commodities with proper care. However, many of the industries located in the region which used to produce exportable commodities and import raw materials or semi-finished materials were closed or were on the verge of closure during 1980s. This has caused serious problem to Calcutta port. With the policy of liberalisation there is change in the scenario and it is hoped that there will be new industries coming up in West Bengal and in other states in eastern region giving a boost to overseas trade from the region.

Calcutta port has tremendous potential since this is in a way the gateway to the entire eastern and north-eastern regions. SCIs involvement is sure to increase with the rising movement of cargoes from/to the region, be it in containers or bulk carriers or in tankers. Though the SCI used to have 20/25 ships at any given time during the halcyon days of breakbulk movement, now the productive container system has necessarily reduced the number of SCI ships calling at Calcutta port. At once I must add that the cargo share of the SCI has steadily gone up as ships have become bigger and turnround has become faster. The role of the SCI at Calcutta port system would increase day by day. We in SCI strongly believe that industrial growth of India is inevitably connected to the hinterland of the Calcutta port system. Hence the future of the SCI is unavoidably but pleasantly tied with the future of the Calcutta port.

STEEL AUTHORITY OF INDIA AND CALCUTTA PORT

M.R.R. Nair

India has been an important maritime nation. Modern India's fortunes are linked to foreign trade and thereby to the operations of its ports. From the days of the British Empire, Calcutta, then a political and commercial capital of India, occupied the pride of place among Indian Ports.

After independence, from the time of the construction of the steel plants, the Public Sector Steel Industry of the country and the Calcutta Port have had a fruitful association. Much of the imports of plant and machinery for setting up the steel plants at Rourkela, Durgapur, Bhilai and Bokaro were effected through the Calcutta Port. During the three and a half decades of steel production, they have been associated with the Port of Calcutta, including its Haldia Docks, on a continued basis for export as well as import Trade.

Every year, the steel plants requirements of spares, consumables, raw materials, etc., have been imported through Calcutta and the value of such imports exceeded Rs. 150 crores last year. Large scale exports and other shipments of Iron and Steel products of the steel plants have taken place through Calcutta and Haldia Docks. Last year such shipments touched 80,000 tonnes. SAIL's import of coking coal is handled through the Haldia Docks and last year it reached a figure of 1.8 million tonnes.

For the modernisation of Durgapur Steel Plant in the late eighties, large scale imports of plant equipment took place through Calcutta. SAIL hopes to continue to import and export through the Calcutta Port in large volumes in the years to come. Signing a Memorandum of Understanding with the Calcutta Port for Berth No. 5 at Haldia for handling coking coal is another commitment of SAIL to the Calcutta Port.

Calcutta is the nearest port to all the integrated steel plants of SAIL other than Bhilai. SAIL's Marketing and Shipping Headquarters are located in Calcutta. The Calcutta Port is, therefore, its partner in trade. For the last few years, SAIL is in the process of rediscovering, strengthening and turning itself into a leading global player. With such priorities, SAIL is increasingly looking forward to expanding its exports and in this context welcomes whatever Calcutta Port does to make itself a world class set-up in a competitive economic scenario. SAIL imports quality inputs in order to produce quality steel which would call for the most efficient port facilities at Calcutta. A highly modernised and efficient Calcutta Port is therefore a partner in SAIL's progress.

SAIL has plans for diversification. Coastal movement of steel, which has started in a small way from Calcutta/Haldia Port, is soon expected to be an established alternate channel for cross-country movement of steel. There are plans to open large warehouses in ports to serve export orders promptly. However, all these can be viable only if the ports facilitate fast and economic operations by prompt vessel berthing, ample availability of hooks, etc. We look forward to such facilities in the Calcutta Port including its Haldia Docks.

The first 125 years of the Calcutta Port have been the resugrence of modern India from the end of medieval times. We look ahead to the next 125 years of Calcutta Port with the hope that this Port will again lead India out of the present into a new era — when India will be a world leader in trade and commerce.

91. Nursery School of CPT

92. Roadside Plantation of Haldia

INDIAN RAILWAYS AND CALCUTTA PORT

Ashok Bhatnagar

Transport bridges the space between the point of supply and that of demand. The demand for transport is thus a derived one and it is conditioned by many factors such as mobility of population, spatial distribution pattern of demand, etc. Transport plays a pivotal role in the economic development and social integration of countries and also of regions within a country. Ideally, the development of transport infrastructure should stay ahead of demand to ensure free flow of men and materials towards a desired economic growth.

The railways in India developed primarily as an aid to trade and efficient administration. The network developed rapidly in the coastal areas as within these were the nerve centres, the metropolises, from which trade and the movement of men and materials were controlled. Although Calcutta Port had been a trading centre since the late 17th century, the construction of four screw pile jetties on the Strand Bank in 1860 marks the beginning of development of modern facilities at Calcutta Port. This development was coterminus with the growth of the rail network in Eastern India.

The flourishing port at Calcutta and the efficient movement of traffic by the railways were largely responsible for rapid development of trade and industry in the eastern region of India. This region saw the development of iron and steel industry, jute industry and engineering goods industry, to name only a few. Both the Railways and Calcutta Port played a crucial role in the transportation of vital components for these industries as also the movement of raw materials and finished products. Trade and commerce flourished and, at the beginning of the era of planned development, the eastern region possessed one of the best developed industrial and infrastructural bases.

As an interface between land and water borne transport, the volume of traffic at any port depends on the level of economic activity in the hinterland and the navigability of the port. The Calcutta Port system today comprises of the dock systems at Calcutta and at Haldia. Since the draft available at Haldia port is greater than at Calcutta, the Haldia dock was designed to have composite cargo handling facilities with particular emphasis on bulk cargo.

The Indian economy has taken off on a path of sustained economic growth. In this era of liberalisation and globalisation of the nations economy, the primary mission of the Indian Railways would be to provide adequate transport capacity to meet the requirements of the nation. The Calcutta and Haldia ports are amongst major gateways to India and it is expected that as trade volumes multiply rapidly, the traffic handled by the two ports would increase substantially. While it is true that the rail-borne traffic emanating from the Calcutta docks have dwindled as compared to yesteryears, there are encouraging signs of revival. The growth of containerised cargo handled by the Calcutta docks has increased substantially during the past few years. With a railway connection to the newly developed computerised container terminal at the Netaji Subhas Docks, rail movement of container traffic would expectedly increase. Conversion of certain sections of metre gauge track to broad gauge and extension of rail network to Birganj in Nepal would provide an impetus to movement of international traffic from the ports by Railways.

It is now acknowledged that movement of bulk commodities to the peninsular region of India can be done in the most economic fashion by using the rail-cum-sea mode. The Haldia docks are ideally located for such movements and over the years has witnessed a steady growth in the handling of bulk commodities such as thermal coal, coking coal, petroleum products, containers and general cargo. The Calcutta Port Trust is augmenting the capacity of the rail terminal at Haldia port to 15.1 million tonnes of rail borne traffic. This would open a new era in the cooperation between the Calcutta Port and the Indian Railways and would facilitate the most economic method of transportation of bulk commodities.

The Indian Railways and Calcutta Port Trust have to play a leading role in providing adequate transport facilities to foster and sustain economic activities for the nation as also the eastern part of the country. The Indian Railways have already initiated steps to ensure availability of adequate transport capacity, reduce transit time and facilitate rapid unloading of consignments at large terminals. To build customer confidence, the Railways have entered into a Memorandum of Understanding with the Container Corporation of India to assure delivery of consignments within a specified time. In the case of bulk commodities like coal, wagons with facilities for bottom discharge have been introduced to facilitate rapid unloading at large terminals. Locomotives with higher horse power have been introduced to facilitate faster movement of consignments. The near future would undoubtedly witness an economic resurgence in the country and for facilitating this resurgence cooperation between the Calcutta Port Trust and the Indian Railways would play a crucial role.

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION AND CALCUTTA PORT

Somnath Chatterjee

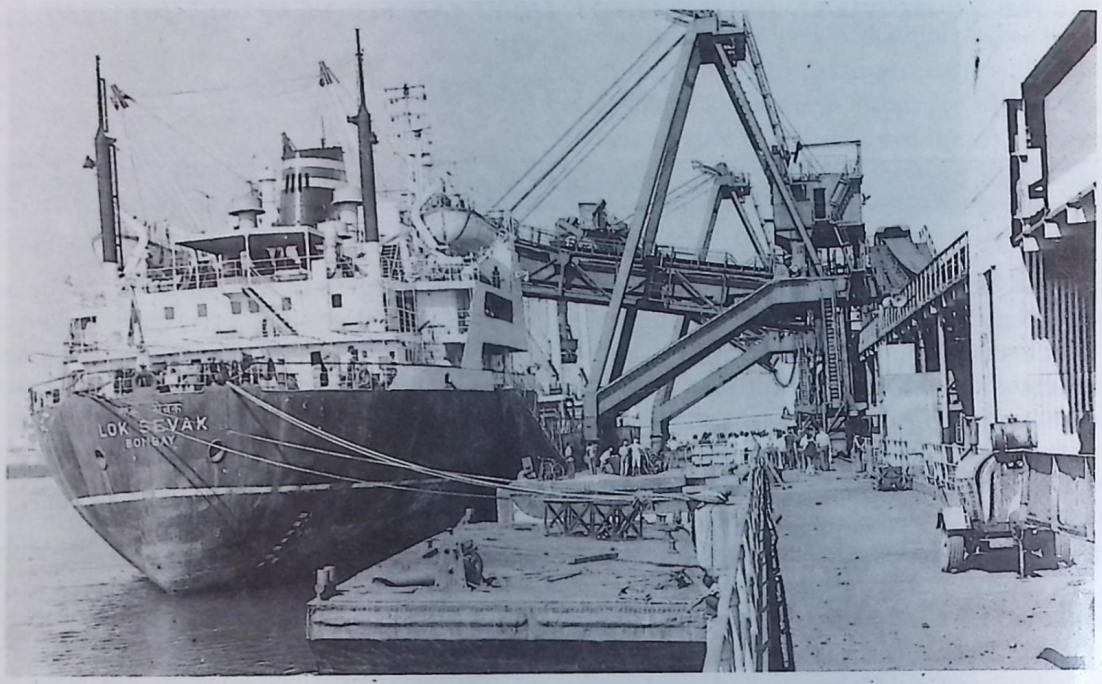
With a solid base in agricultural and allied sectors, West Bengal is now poised for an industrial resurgence in trade and commerce through partnership with Indian and foreign enterpreneurs. It is our firm belief that given the present tempo and favourable climate, the state will be able to forge ahead of its counterparts in industrial development. Calcutta, in the days gone by, known as Commercial Capital of India, may regain its past glory and occupy the *Numero Uno* position hopefully by the turn of the century. It may be relevant to add that the world-renowned US consultancy firm Arthur D Littles report on State Economic Prospects considers West Bengal as India's most rapidly growing industrial region and Calcutta as a leading industrial, trade and service centre of India.

Continuous and sustained measures being taken by the Government of West Bengal including the New Industrial Policy coupled with revamped Single Window Cell for clearance of viable projects within a stipulated time-frame and Monitoring Cells at State and District levels by involving all concerned people and agencies at regular interval are expected to give an impetus to the State in efforts to provide congenial climate for investment. In fact, an environment conducive to enterprises, investment and innovation has been created. This is borne out by the visits of various delegations from abroad and parts of the country for setting up commercial establishments and industrial units in West Bengal. Huge domestic and foreign investments are flowing, involving an estimated total project cost of around Rs. 40,000 crores – some of which are being firmed up and the balance in the pipeline. Our ultimate mission is to harness the industrial potential as well as to generate income and employment through a process of rehabilitation and revival of the existing industries besides accelerated development of new industries to the prosperity of India and West Bengal in general and socio-economic upliftment of the urban and rural population in the region in particular.

Development of an economy cannot be conceived in isolation without corresponding progress in infrastructural facilities. The link between infrastructure and development is, therefore, a continuous process and progress in development has to be preceeded, accompanied and followed by progress in infrastructure. To sustain the growth momentum, a concerted effort is to be made by all concerned to modernise and upgrade the existing infrastructural facilities and services. For this purpose, the steps are being taken by the State Government in that an elaborate network of roads, expressways, north-south corridor, improved river transport, hopping air taxis, etc. are on the anvil. The State Government has already planned to develop minor port at Kulpi in association with private sector.

Calcutta port is likely to stage a comeback as one of the most important Feeder Ports in this region. Traffic volume at Calcutta port will witness quantum jump from its present level. Obviously, the demand from the port will be for the highest degree of efficiency in its operation. It is necessary to improve the efficiency through substantial modernisation efforts. Such modernisation efforts require huge capital investment. The Government alone cannot meet the fund required for fast and accelerated development. Wherever relevant and mutually beneficial, involvement of private enterprises for development of facilities in selective or specific areas may go a long way in providing cost-effective and timely service to the clients. Improvement of roads leading to Calcutta port, bridges, railways, cargo handling equipment and other connected facilities should be taken up on a priority basis.

Some of the large scale investments in the State are export-oriented. Such potential investment will call for large scale import of plants, machinery, raw materials, etc. An area of concern is congestion at port. The delay in clearance of essential imports such as machinery and raw materials required for industrial development, apart from loss of foreign exchange, slows down

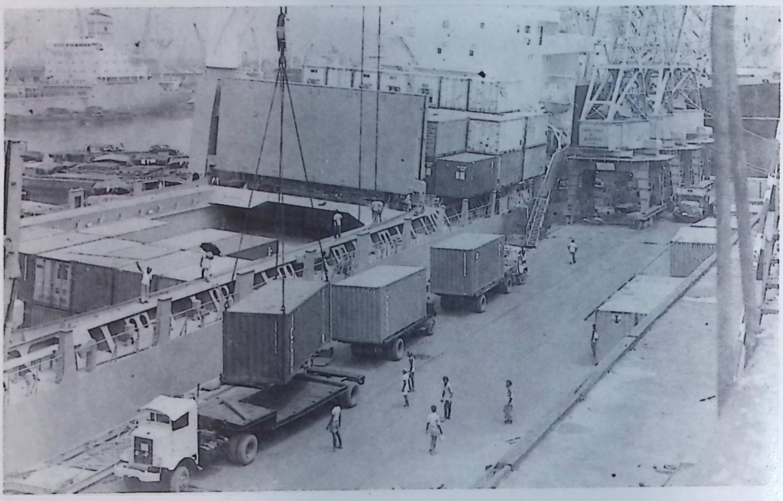


93. Berthing of Ship at Haldia

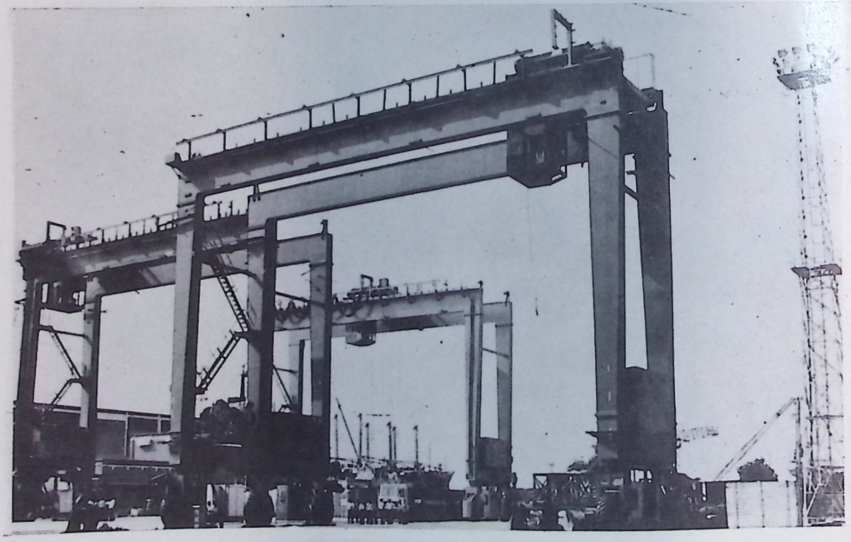
94. Grab Dredger at Work

implementation of projects. All steps are, therefore, required to be taken for upgradation and modernisation of facilities in a systematic and planned manner including development of full-fledged container terminals to international standard to meet the growing demands for trade and commerce.

The development process initiated in the State hinges to a great extent upon cost-effective and timely service at Calcutta Port. Calcutta port has, therefore, a vital role to play to ensure success to the ongoing process of intense industrial activity in West Bengal. It is hoped that Calcutta Port and industries in close association with the government will work hand in hand to ensure that our port facilities and services are modernised and upgraded including introduction of latest technology to be able to meet fully the growing demand of economic growth process in West Bengal.



95. Container Handling at CDS



96. Container Yard at CDS

VIEWS ON LABOUR RELATIONS

RUSSI MODY

The topic given to me, I am glad to note, is of topical interest. Eastern Region, particularly Calcutta, has always been close to my heart. I thank Calcutta Port Management for giving me a chance to share my views about a subject which I cherish.

Port is one of the key infrastructure facilities which induce and contribute to the development and growth of both agriculture and industry of the region it caters to. Similarly a port, which is not blessed with a prospering hinterland rich in natural, agricultural and industrial resources, can never survive, let alone flourish.

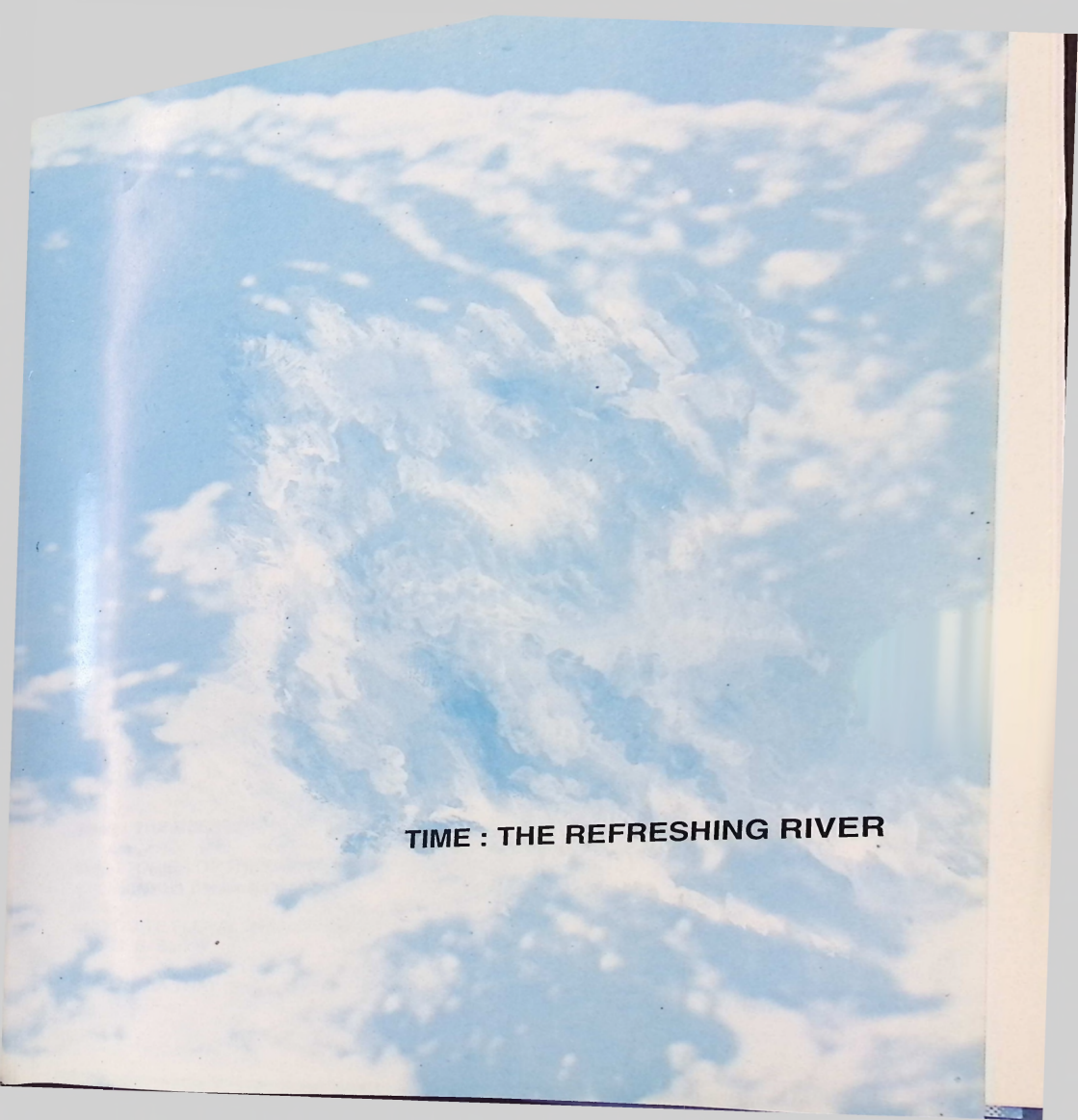
Unfortunately the Calcutta Port has its salad days behind it. Since Independence this port held a premier position in India. However, the decline started in the Eighties which is continuing into the Nineties. Unless sincere and concerted efforts are made at all levels — Government, Management and Employees — I do not see any miracles happening. In this context the topic itself suggests the answer. What made this historic port great was the commitment and missionery zeal at all the three levels indicated above.

The problems of Calcutta, both natural and man-made, like limited drafts due to siltation, large idle labour and high labour cost, low productivity, lack of modern cargo handling equipment, sluggish and stagnating hinterland, lukewarm marketing and a host of others must have been discussed a nauseum and thread-bare at various forum over the years. Therefore, I will not flog a dead horse.

I shall tackle the human and labour aspects which severely affect the growth of this port. I am told that Calcutta Port is groaning under the burden of excess labour and low productivity. As a man who knows a little bit of industrial relations, because of my half-a-century of hands-on experience with labour, I dare say that this problem should be tackled humanely. Rationalisation and Rehabilitation should be the approach rather than retrenchment. Steps should be taken to reward efficiency and productivity. The old, sick and inefficient labour or employees should be identified. Tailor-made VRS and training programmes should be developed to cater to this vulnerable and weak group. In all these activities the accent should be on improving productivity.

In order to afford a large labour force, the volume of traffic should increase. Lower labour costs and higher productivity should attract more cargo. However, the message of the new thrust Calcutta Port is giving should be propagated by a dedicated Marketing Team with Missionery Zeal. If a far away port like Madras can get train loads of containers from New Delhi, why not Calcutta ?

With this human and dedicated approach Calcutta Port can march into the 21st century confidently. Lets gird-up our loins and put our shoulders to the yoke. Wish all of you in Calcutta Port Trust a brighter future.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THE STORIES OF THE GHATS ON THE HOOGHLY

Somnath Bhattacharya

Calcutta Port Trusts (CPT) is entrusted with the function of river conservancy for the entire navigational fairway commencing from the feeder canal at Jangipur to Sandheads. Bank protection through various measures including construction of protective embankments and ghats is an area of concern for the Port.

Numerous ghats, dotting the banks of Hooghly, have sprung up during different periods of history. They have served the important purpose of embankment protection apart from the service they rendered for trading, loading of merchandise on barges including vessels carrying passengers and for other religious and household chores. The ghats have also served other manifold functions like bathing, ferrying, disposal of corpses, cremation, performance of Hindu rites & rituals, etc. Turning the pages of history, we find quite a large member of Rajas, Zamindars and Baboos having made these ghats their favourite haunts of merriment and resorts for recuperation of health. A study of the ghats in and around the banks of river Hooghly gives us a fascinating insight into the socio-economic and cultural dimensions of the times which served as stimuli to their genesis and reveal the character of the city being inextricably inter-twined in a complex web of folklore, myths and reality.

One of the earliest references of ghats/public landing places is found in the notification issued by government of India on 21st August, 1872, wherein a list of public burning ghats maintained on both sides of river Hooghly by the Commissioners of the Port of Calcutta was published. It was made incumbent upon the Commissioners to provide a sufficient number of public landing places from and upon which the public should be permitted to embark and to land free of charge.

Presently there are 27 bathing ghats (including 2 on the Howrah side) and 15 private bathing ghats (including 3 on the Howrah side) maintained by the Port Trust out of endowment funds placed at their disposal by the donors. There are also a few ghats maintained by the Calcutta Municipal Corporation, the Government of West Bengal and Howrah Municipality. The responsibility of the Port Trust is limited to "petty repairs and maintenance (not improvement) of bathing ghats". It does not include the creation of additional amenities. However, the Port Trust has provided civic facilities/services to the public by way of improvement of these bathing ghats through construction of platforms, repair of sheds, improvement of roads and roadside facilities etc.

An attempt has been made below to provide a brief account of these ghats arranged in order of their location along the eastern bank of river Hooghly from Cossipore in the north to Kalighat in the South. It provides a glimpse into the history of their curious inception and how, through the ages silhouetted against the back drop of their half forgotten past, they have became an inseparable entity in the physical and cultural landscape of this city.

II

1. *Pramanick Ghat, Cossipore* is located to the extreme north of Kashipur and to the West of Pramanick Ghat Road, a locality largely inhabited by 'Vaisya Gandha Vanik' families.

2. *Kashipur Cremation Ghat, Cossipore* is located to the South of Pramanick Ghat and, from the foundation tablet, it is known that it was constructed by the Municipal Commissioner in 1874-75 for the use of the Hindu community on the land donated by Baboo Chandra Coomar and his brother of the Zamindar family of Narail. Religious apostles including Ramakrishna Paramahamsa, his disciple Swami Abhedananda, and legendary stage artist Natyacharya Sisir Kumar Bhaduri were cremated in this burning ghat.

3. *Rustomji's Ghat, Cossipore* was built in memory of Rustomji Cowasji Vanaji, a reputed Parsi Merchant from Bombay who lived in Calcutta from 1809 and died in 1852. He was involved in shipping business and was

involved in transhipment of opium to China. He was a good friend of Dwarka Nath Tagore who also had his shipping trade stretched to the countries of S.E. Asia, mining at Ranigunge, tea and opium plantations at Assam and banking business at Calcutta in collaboration with English mercantile units. It was Rustomji who built the first Fire Temple at Ezra Street in Domtooly in 1839 and was the first Indian to establish a Life Insurance Firm and steam navigation along with small steam-ships which docked at Baranagar.

4. *Prannath Roy Chowdhury's Ghat, Cossipore* was founded in memory of Prannath Roy Chowdhury, the Zamindar of Satkhira, Khulna, now in Bangladesh.

5. *Heeralal Seal's Ghat, Cossipore* : The much known Motilal Seal had a large landed property in Kashipur including the 'Moti Jheel'. The ghat was founded in memory of his eldest son, Heeralal.

6. *Raja Vaidyanath Raibahadur's Ghat* : The other name of this ghat was Gun Foundry Ghat. Raja Vaidyanath was the third son of Raja Sukhomoy of Posta Bazar. Vaidyanath's Garden house is still there in Kashipur.

7. *Chitpore Pool Ghat, Chitpore* : The ghat is marked in the maps of Upjhon (1795) and Plan of Calcutta (1825), but not in other maps. It was located on the bank of the Maratha Ditch or moat which was excavated in 1743 because of the scare created by the Maratha cavalry's onslaught in the western bank of Hooghly. The Calcutta Council moored a gunship 'Tigress', off Perrin Point for guarding the river against Maratha raid. The Ditch, semicircular in shape was intended to be excavated from Sutanooty in the north to Govindapur in the South. A bridge was later constructed over the ditch which came to be known as 'Chitpore Pool'.

8. *Rustomji's Ghat, Bagbazar* : There is another ghat named after Manakji Rustomji on the south of Bagbazar Canal. He was the son of famous Rustomji Cowasji Vanaji and succeeded the firm Rustomji Cowasji Company. The area known as Manicktala was probably named after him. He was the first native Sheriff of Calcutta in 1874.

9. *Old Powdermill Ghat, Bagbazar* : This Ghat is marked in the map of Mark Wood (1784), Upjhon (1795), Plan of Calcutta (1825). Located along the bank of Hooghly, it was within the vicinity of a large garden which later came to be known as "Perrin Saheber 'Bagan", since one Perrin, a captain of a ship of erstwhile East India Company bought and developed the garden as a resort. Because of Nawab Sirajuddaulla's threats, the Perrin's Garden was abandoned and was auctioned when Mr. Holwell purchased it at Rs. 25000/- only in 1752 and sold it to Fredrick Scot, the ex-commander of the old Fort William and father of Mary, first wife of Warren Hastings. Scot founded a gun powder foundry in this garden. The ghat owes its name to the new gun powder factory.

10. *Durga Charan Mukherjee Ghat, Bagbazar* : This ghat is situated to the south of Rustomji Ghat. Dewan Durga Charan a resident of Bagbazar worked as Dewan of Mr. Roe, the Collector of Rajshahi, Mr. Harris, Mint Master, and Mr. Adison, an opium agent and became prosperous. Forklore has it, that one Raja Srikantha Roy mortgaged a part of his Zamindari of Chandhra in Jessore for Rs. 52,000/- which was surreptitiously sold in conivance with the then Sheriff, to his son Shibchandra, the leader of the Pakshi Dal (Party of Birds) in Bagbazar, who after a few years sold the said property for 2.5 lakhs of rupees. The grand son of Raja Srikantha obtained a decree from the Supreme Court for Rs. 40.5 lakhs after forty years. Even the Privy Council endorsed the verdict of the Supreme Court as a result of which the whole property which was left by Durga Charan, including the residential building at Bagbazar, had to be disposed of. The ghat is presently maintained by CPT.

11. *Rajah Nabakissen's Ghat, Bagbazar* : This ghat was built in the memory of Raja Nabakrishna Dey after his death. Presently the ghat is maintained by CPT. Raja Nabakrishna (Dey) Dev (1732-1797) was the founder of the Raj Family of Sobhabazar, great grandson of Rukmini Dev who was the estate manager of Savarna Chowdhury's estate at Barisha. Because of his mastery of Arabic & Persian languages, Nabakrishna was appointed a teacher of Warren Hastings in 1750. He also taught Clive who took great interest in the study of Persian. This earned him the title of Munshi. It is said that he arranged to furnish secret information, as and when required, to Drake, Clive and Hastings during their visits at Falta and thereby earned the trust of the E.I. Company. Clive impressed upon the Moghul Emperor to award him the title of Majaraja Bhadur and six thousand Mansabdri in 1766. He received the Talukdari of Sutanooty from Warren Hastings and worked as Company's agent and estate manager in different capacities. He enshrined in his palatial building

at Sobhabazar, the images of Govinda and Gopinath and established a number of Toles (Centres for learning of Sanskrit) at Grey Street. His house was visited by eminent Sanskrit scholars including Jagannath Taraka Panchanan, Vaneswar Vidyalankar, et.al. He was a good patron of Yatra Kabigan, Tarja, Khrai, Half-Akhrai and other forms of folk-culture of times. The ghat was very likely to have been built by Raja Radha Kanta Dev, son of Gopimohan (adopted son of Nabakrishna) who succeeded the whole property of the north of present Raja Nabakrishna Street. Possibly Raja Radhakanta Dev, an ardent admirer of Raja Nabakrishna, built the ghat in gratitude to his grandfather.

12.*Raja Rajkissen's Ghat, Bagbazar* : Rajkrishna (1782-1823) was one of the eight Baboos of Calcutta in the 1st Quarter of the 19th Century who squandered his inherited wealth in conspicuous consumption. One of the interesting stories which is woven round his name is that, on the request of one of his Muslim concubines, he built a mosque near his residence (Rajbari) and used to participate in Muslim festivals, including Muharram, without having been formally debarred from taking part in Hindu religious festivities. The ghat was founded in his memory sometime between 1825 and 1842 as its name and location on the Hooghly just below the Maratha Ditch is marked only on the map of 1842. It is presently maintained by CPT.

13.*Pramada Sundari Ghat, Bagbazar* : Pramada Sundari, daughter of Raja Narendralal Khan of Narajole and wife of Attorney Sushil Chandra Neogi of Bagbazar died in 1922 at the age of 34. A bust of the lady is still there in the bathing ghat, which is presently being maintained by CPT.

14.*Rasik Neogy Ghat, Bagbazar* : Bhuvan Mohan Neogi, the grandson of Rasik Lal Neogi, was well known because of the fact that the Great National Theatre was founded by him in 1873 along with other associates including Natyacharya Amritlal Basu, Ardhendu Sekhar Mustafi and Dharmadas Sur. Rasik Neogi Ghat, located close to the Annapurna Ghat had the magnificent structure with a large chandney surrounding a big hall which was used for holding of rehearsals of the drama 'Nildarpan', directed by Amritlal Basu in 1872. The historic chandney and the hall were demolished long ago by the Port Commissioners for construction of Port Trust Railway on the Strand Road in 1875. However, the bathing ghat is presently being maintained by CPT.

15.*Raghoo Mitter's Ghat, Baghbazar* : This is presently known as Annapurna Ghat because of the location of Annapurna Temple at 193, Bagbazar Street. Adjoining the said temple, four temples of Siva were founded along the ghat around 1776 by Vishnu Ram Chakravarti. He worked as an Amin on a Salary of Rs. 4/- only under Warren Hastings who granted him 52 bighas of land in Bagbazar. Raghunath Mitra was a son of famous Govinda Ram Mitra of Coomartooly, the Black Zamindar of Calcutta. During the formative period of the East India Company in the 1st half of the 18th Century Govinda Ram Mitra was a very trusted man of the Company and amassed wealth by deploying various means. He built the Chitreswari Temple in Chitpore which was in those days a major landmark of the city. The name of Raghoo Mitter's Ghat is marked in the Maps of 1784, 1795 and 1825.

16.*Kashimitra's Ghat, Bagbazar* : In Upjhon's map of 1795, this ghat was named after Kashiram Mitra. It is also marked in the maps of 1784 & 1825. The ghat had been shifted from its original site to the west at the time of the construction of Strand Road during the period 1823-27. Kashiram Mitra was a prosperous man of the city in the later half of the 18th Century. He had four wives without any descendant. He spent his wealth in philanthropic missions and constructed a cremation ghat nearby his large residential building in 1774 at a time when there was no specific burning ghat in Calcutta.

17.*Golabari Ghat, Hathkhola* : This ghat is marked in the map of 1842 and is still maintained by CPT. It has probably been so named due to unloading and storing of bulk cargo for re-sailing. On the other side of the river in Salkia-Howrah, there is another Golabari Ghat where the Salt wharf and jetty were constructed. There is a popular belief that the ghat was constructed by one Dewan Nandaram Sen of Sobha Bazar. The ghat began to be used in 1856 for the disposal of dead animals. The Golabari Ghat was resited at the time of construction of the Municipal Railway in 1867. The ghat was sold to the Calcutta Port Commissioners in 1874 for its use as a wharf.

18.*Bonomali Sircar Ghat, Shyambazar :* This ghat is marked in the maps of 1784,1795,1825 and also in 1842. Bonomali Sircar was the Commercial Resident of the E.I. Company at Patna and also for a while worked as the Deputy Trader in Calcutta. He reaped his fortunes and became owner of large landed properties in

Calcutta, Hooghly and 24 Parganas. He built one of the largest buildings in Calcutta extending from Chitpore Road to the river bank, proverbially known as the "the House of Bonomalee Sircar". He was a contemporary of Baboo Govindaram Mitra, the Black Zaminder of Calcutta in the 18th Century.

19.*Ketua Ghat, Sootanooty :* This is marked in the maps of 1784 and 1795. It was used as a jetty made of wooden planks and was demolished when the Strand Road was constructed during 1823 to 1827.

20.*Champatolla Ghat :* This ghat was situated to the south of the Ketua Ghat and was marked in the maps of 1784 and 1842. The bathing ghat used by the females, is presently maintained from the Endowment funds of CPT.

21.*Coomartooly Ghat :* It was the place where Baboo Govinda Ram Mitra, Bonomali Sircar, Kabiraj Ganga Parsad Sen etc. had lived and is presently famous as a centre of clay images and figures made by the deft hands of the craftsmen who hailed from Nadia, Burdwan and Hooghly. All requirements of silt, clay etc. are provided by this ghat which is now maintained by CPT.

22.*Raja Rajballabh's Ghat, Bagbazar :* The ghat is not mentioned in any maps of 1784, 1795,1825 and 1842, but included in a list of ghats as mentioned by the historian Radha Raman Mitra in his book '*Kalkata Darpan*'. Raja Rajballabh (1931-98) was the son of Majaraj Durlabhram, more commonly known as Raidurlabh, who was the Deputy Prime Minister of Nawab Sirajuddaula and an associate of the anti-Siraj conspirators. He was appointed as Naib Subedar of Orissa by Nawab Alivardi Khan. Raja Rajballav was the Chief Secretary of Nawab Mirjafar and Revenue Minister of Nawab Mobarakuddaula. Both Raidurlabh and Rajballabh came to Calcutta in 1758 fleeing from Murshidabad when Mirjafar had conspired to kill them as Raidurlabh had the intention of overthrowing him from the throne. Clive welcomed them to the city and compelled the Nawab to release their families to settle in Calcutta. Raidurlabh constructed a palatial building in Bagbazar. The descendants of Rajballabh had a long-drawn property suit. However, the family lineage lost its trace after Rukminiballabh, the great grandson of Rajballabh.

23.*Jugganath Ghat, Sobha Bazar :* The ghat is situated near Sobha Bazar Street to the North of Rathtollah Ghat. It is marked in the map of 1842. The present Jagannath Ghat maintained by the CPT is located in the north end of Howrah Bridge approach from Calcutta and south of P.C. Tagore Ghat and is presently in no way connected to the Juaggernath Ghat of 1842. Because of the location of the Rathtollah Ghat nearby, the Juggernath Ghat marked in the map of 1842 was possibly a part of the series of ghats such as Juggernath, Rathtollah and Mohontoney, all having unique association with Lord Jagannath, his rath (the wooden chariot) and his priest (Mohanta).

24.*Rathtollah Ghat, Sobha Bazar :* This ghat is located at the western fringe of Sobha Bazar (Ketua St.) and marked in the maps of 1784, 1795, 1825 and 1842. It is presently maintained by the CPT under the name Hurro Chand Mullick bathing ghat. There is a lane in his name in Sobha Bazar area. It is said that the Rath belonging to Sobharam Byssack was kept in this ghat for which the ghat is so named. Atul Krishna Roy in his '*Short History of Calcutta Town and Suburbs*', 1902, (reprinted by Ridhi, 1982, PP. 291-92) stated that Nandaram Sen of Sobhabazar, Dewan of the Company at Dacca, constructed the Rathtala Ghat and Rameswar Siva Temple.

25.*Mohanntoney Ghat, Sobha Bazar :* This ghat is marked in the map of 1842 and located between Sobha Bazar Street and Hatkhola. The Mohontony Bathing Ghat is presently maintained by CPT. It is believed that Anandamoyee Kali was enshrined by one Mohonto who had a disciple named Jugannath, a straw merchant. It is possible that the ghat was ascribed the name as it was somehow connected with the wife of the said Mohonto.

26.*Durmatollah Ghat, Darmohata :* The ghat is marked only in the map of 1842 and might have derived its name from Darmahata, the market built of bamboo strip mats (darma) which were used for thatched houses and huts in the bygone days of Calcutta.

27.*Sootanooty Ghat, Hathkola :* This is traced to the ghat where Job Charnock, on the advice of the Seths and Byssack merchant of Sapta Gram, had first anchored his ship in 1688. It is believed to be one of the oldest ghats of the city. The word 'Sootanooty' means a bundle of yarns. The foreign traders used to get muslin and silk yarns, bearing the intricate patterns and design of their requirement, either on commission (dadan) or at their factories in Hooghly, Cossimbazar, Farasdanga, etc. A new ghat named 'Hathkhola Ghat' was constructed before 1842 to replace the demolished Sootanooty Ghat. The pattern of trade of the E.I. Company in India in the mean time had significantly

changed as a result of comparatively cheaper imports of finished cotton cloth from England. Gradually Hatkhola turned out to be an auction market for jute which was brought in boats from various parts of the country. Subsequently the railway network was laid and Chitpore yard began to function as an unloading terminal of cash crops for making its way through the Calcutta Port.

28.*Ahiritolah Ghat :* is marked in the maps of 1784, 1795 and 1825. Presently the ghat is maintained by CPT. The word Ahir is derived from 'Abhir', the Sadgope community of the milkmen. Possibly the original ghat was primarily used for bathing of the cattle.

29.*Manik Bose's Ghat :* is marked in the maps of 1784, 1795, 1825 and 1842. Manick Bose was a prosperous merchant in Dhaka and it is believed that Manickgunge was named after him. The well known Parry Charan Sircar, the educationist, was married to one of the great grand daughters of Manick Bose and acquired all the properties of the family which later on was purchased by the Calcutta Improvement Trust. The ghat alongwith Ramkrishto Dutta's Chadney is presently maintained from the Endowment Funds of CPT.

30.*Mudden Dutt's Ghat, Hathkhola :* Madan Mohan Datta (1710-1787 or 1797), the founder of the Hat Khola Datta family, had his business in usury and shipping trade. He also owned a yard for purchase/repair of sunken ships, having quite a number of ships in his possession. The ghat was build primarily for the purpose of Madan Mohan's shipping trade and ship repairing yard.

31.*Toono's Ghat, Hatkhola :* Ramtanu Datta alias Toono, the eldest son of Madan Mohan Data was one of the famous eight Baboos of the city who squandered his wealth in pursuance of wildest of pleasures. A classic rumour going the rounds in those times was that in Calcutta, his house was daily cleansed with 'Atar' (essence of scented flowers) and his household utensils were made of gold and silver only. Mudden Dutta's Ghat & Toono's Ghat, find reference in the maps of 1784,1795 and 1825. Probably both of them were demolished at the time of the construction of the Strand Road.

32.*Nimtolla Cremation Ghat, Nimtolla :* The burning ghat is marked in the map of 1784,1795,1825 and as Limtollah in the map of 1842. The bathing ghat (used by males/females) are now maintained by the CPT and the burning ghat by Calcutta Municipal Corporation. Originally the cremation ghat and the temple of Anandamoyee, the Smasan Kali, were on the eastern fringe of the present Strand Road adjoining the river bank. During the construction of the Strand Road, the ghat was shifted to the west in 1825 within an area of 160' x 90' enclosed by a wall of 15' high with an opening on one side. Raja Rajchandra Das, husband of Rani Rashmoni, built a hall to be used by the people, coming from distant places for cremation of persons, who desired to die on the banks of the Holy Ganga. The dying persons were taken out on the river bank and kept there for hours together before the ultimate kiss of death (Antarjali). Interestingly, all the dead bodies brought to the ghats were not cremated. Children below six years, Vaisnav (Vostam) and Yogi (Hindu weaver community) were to be buried for which there were separate infrastructural provisions under the aegis of Calcutta Corporation. The dead bodies of these categories of people were mostly buried on the river banks of the cremation ghats. The bodies of the persons who died of leprosy, snake bites etc., committed suicides or were convicts, and socially outcasts were thrown into the river. However, the police Commissioner of Calcutta engaged a few boats and doms for carriage/disposal of such dead bodies further down stream of Hooghly. The ghat had to be shifted to its present location in 1875, the cost primarily being borne by the Port, for the purpose of the construction of Port Commissioners Railways from Bag Bazar to Mir Bohur Ghat. Ramgopal Ghosh, known for his skilful oratory prevented the then Justice of Peace from removing the Kashi Mitra and Nimtolla Cremation Ghats to the south of Tolly's Nullah. Disposal of the huge quantity of ashes from the Kashi Mitra and Nimtola Cremation Ghats posed a big problem for which quite a number of boats had to be deployed for carrying ashes further down the river.

33.*Jorah Bagan Ghat, Jora Bagan :* This ghat marked in the maps of 1784,1795,1825 is located to the west of Jora Bagan Square. Vaisnav Charan Seth of Govindapur shifted his residence to Darmahata, Burra Bazar, giving away his land for the construction of the New Fort in the Maidan. He developed two gardens near his residence from which the Ghat derives its name.

34.*Gokul Baboo's Ghat :* It is marked in the maps of 1784,1795 and 1825 and was located to the west of Kasinath Baboo's Bazar. It was built by Gokul Mitra (1724-1808), the merchant who obtained from the

Company the monopoly right of importing salt from England, for transporting the merchandise and for establishing a salt godown. He was also the supplier of food/fodder for the elephants and horses of the E.I. Company. Beharilal Mitra (1860-1933), the great grandson of Gokul Mitra, donated an endowment fund out of which the Beharilal Home Science College in the Hastings House is being run by the Calcutta University. The ghat was probably demolised at the time of construction of Strand Road.

35.*Pathuriya Ghat :* It is marked in the maps of 1784,1795,1825 and 1842. Opinions differ as to the origin of the ghat. This ghat was either built by laying stone slabs, or stone boulders, carried in large boats, which were unloaded there before the construction of the Railways. Paturia in Hindi means prostitutes and the ghat in all likelihood was used by them. Pathuriya street functioned as the approach to the ghat in 1825 and the area nearby began to be known as Paturia Ghat, the residential area of a number of eminent persons of the 19th Century.

36.*Soberam Bysaak's Ghat, Burra Bazar :* Sobharam is said to have been born in Muksudabad, (Murshidabad) in 1690 and died in 1773. As the story goes, Sobharam had come to Calcutta from Saptagram for maintaining trade with the East India Company. He left his residence and Juggannath temple at Govindapur for the construction of the new fort in the Maidan and built his residential house in Burra Bazar. The ghat was rebuilt to the west of Strand Road during the construction of Strand bank and is being presently maintained by the Port Trust.

37.*Nabob's Ghat :* was built in front of the new Mint House constructed on the Strand Road, possibly by the E.I. Company, for welcoming Nawab Mirjafar to Calcutta and for a long time was maintained by the Nawab of the Murshidabad Estate for their own use. There is a lane to the north of the Mint House named, Nawab lane, where the Nawabs had their residence. The ghat is marked in the maps of 1784,1795,1825 and 1842.

38.*Vaishnava Das's Ghat :* is marked in the maps of 1784 and 1795 only. Vaisnava Charan Seth, known also as Vaishnavadas Seth, was born in Govindapur and was the son of Janardan Seth, an agent of the E.I. Company. He acquired a great fortune by supplying clothes to the Company and had huge landed property. He granted Nilmony Thakur, the ancestor of the historic Tagore family, a plot of land to build his house. Gouri Sen, another legendary figure of old Calcutta known for his philanthropy, worked under Vaisnav Das and became rich by land-deals. Sen donated the money to release the persons who were convicted for insolvency or nonpayment of debt. This altruistic act of Gouri Sen made him proverbially famous with a pithy bye-line associated with his name : "If money is required, Gouri Sen will give it".

39.*Meerbhur's Ghat* : as spelt in the map of 1842 is originally traced in the map of 1795 and located by the south west corner of the New Mint House on Strand Road. Etymologically, the word 'bahr' has a Persian origin meaning 'naval fleet'. It is likely that the fleet of Mirjafar during his sojourn in Calcutta in 1757 was anchored in the ghat, located close to the Nabob's Ghat. The first stretch of the then Port Commissioners' Railway built in 1875 extended from Bagbazar to Meer Bohur Ghat for transportation of goods traffic to and from the jetties and wharfs of Calcutta Port.

40.*Casseenath Baboo's Ghat*, marked in the maps of 1784,1795,1825 and also of 1842, was named after Dewan Kashinath Tandon (1721-1792), a Punjabi merchant settled in Calcutta. Kashinath was one of the four Calcuttans who were highly favoured by the E.I. Company. Kashinath was a polyglot, knowing Punjabi, Sanskrit, Persian and other languages. He worked as an assistant of Mr. Frankland in the survey work of Calcutta, having acquired in the process a good number of places suitable for development as markets in Clive Street and Burra Bazar area. He also acquired Posta Bazar, Natun Bazar and Phool Bagan. He was appointed Dewan by Clive, the position that made him fabulously rich in spite of the long drawn law suit against the Majaraja of Kashijora where Kashinath worked as a Company's agent. This suit was a sensational one as it went upto the Supreme Council of the Governor General and the Supreme Court. Kashinath was one of the main witnesses in the trial suit of Nanda Kumar.

41.*Huzurimull Ghat* is marked in the maps of 1784 and 1795. Huzurimull was a Punjabi Sikh trader in Calcutta, relative of Omichand and an agent of Jagat Seth. In lieu of his financial advances to E.I. Company in times of Buxar War, he received a huge chunk of landed property in Calcutta through the good offices of the Governor Verelst. Apart from building the ghat on Hooghly and a Siva temple, he dug a deep tank in Bowbazar Baithakkhana called Padmapukur in 1780. The history of the demolition of the ghat is not know.

42.*Nayan Mullick's Ghat* is marked in the maps of 1784 and 1795. Nayan Mullick (whose full name was Kamal Nayan) was the son of Darpa Naryan Mullick and grand son of Rajaram Mullick who was said to be a contemporary of Job Charnock and came to Calcutta from Tribeni. Nayan Mullick (1710-1797) was a banker, a gold and silver merchant and later a Commissioner for Disbursement of Money for Compensation to the persons who were affected by Siraj's attack on Calcutta.

43.*Rammohan Mullick's Ghat*, marked in the map of 1842 is located in a site nearby the Nayan Mullick Ghat.. Rammohan was the fifth son of Nimaicharan Mullick and grand son of Nayan Mullick. Rammohan was declared the custodian of his father's property. Rammohan died in 1863 at the age of 84 years.

44.*Mullick Baboo's Ghat* : Presently Calcutta Port Trust maintains a ghat named after Nimai Charan Mullick (1736-1807). It is commonly known as Mullick Baboo's Ghat located in the Southern approach of Howrah Bridge. Nimai Charan was the wealthiest and the most famous among all the members of the Mullick family. Apart from having landed property, he established trade directly with the foreign merchants of European States and was the trusted banker and financial adviser of Justice William Jones, the founder of the Asiatic Society (1784). The ghat was constructed in his memory (between 1842 and 1863) by his fifth son, Rammohan.

45.*Barreto Ghat* : marked in the maps of 1784 and 1795 and 1825, it was probably demolished for construction of Strand Road. Joseph Barreto was a descendant of Portuguese Viceroy of Goa. (1558). He hailed from Goa and established himself as a very successful banker and trade agent. He amassed a huge wealth which he donated for the construction of the Roman Catholic Church, Portuguese Church in Murgihata in 1797 and Roman Catholic Cemetery near Sealdah in 1786. He was the banker and Khajanchi of the Hindoo College since its inception in 1824.

46.*Armenian Ghat* : Near the Barreto's Ghat, the Armenian Ghat was constructed before 1854 when the East India Railway installed its booking counter at the site of the ghat and the Railway Passenger ferry ghat to and from Howrah Station. Trams drawn by horses on tracks from Sealdah Station to Armenian Ghat for carrying passengers and goods served as a link between Sealdah to Howrah, operating for about 9 months in 1873. A stone plaque was laid in the ghat by a few English ladies in memory of the pilgrims, mostly women, who died with Sir Johns Lawrence in the cyclone of May 25, 1887 on their way to Puri. Armenian ghat is now used for ferry service by 'Hooghly Jalapath Parivahan Samity'.

47.*Biroo Mullick's Ghat* was located to the South of Champatola Ghat. Biroo Mullick was the son of Vaishnavdas Mullick (1775-1841) and a resident of Darpa Narayan Thakur Street. The building where he stayed has a historic association in the sense that Rabindranath Tagore tied the thread of fraternity (Rakhi) round the wrists of Muslim carriage drivers in Birru Mullick's stable in 1905.

48.*Rooplal Baboo's Ghat* : Lying to the North of Rammohan Mullick Ghat mentioned in the map of 1842, it was named after Baboo Rooplal Mullick of Chitpore Road, the youngest son of Gour Charan and elder brother of Nimaicharan Mullick. He was the first native who rid himself of religious superstitions and threw open his house for the entertainment of Europeans. It has been noted by the journalists of those times that he had a good taste for building architectural masterices. The palatial building of Baboo Rajendralal Mullick in Jorasanko, which house rare sculptures and paintings imbibing the Western style, is now a private palace museum and an important attraction for the tourists.

49.*Greater Bazar Ghat* is marked in the maps of 1784,1795 and 1825. Burra Bazar, in the 18th century was confined to the areas of Bazar Calcutta in Sootanooty, Clive street and its adjoining areas. Monohardas Shaha, son of Gopal Shaha came to Calcutta from Benaras for purposes of trading and established a wholesale trading area in 1800, now known as Monohar Das Katra. He constructed a large tank in Maidan to the west of Chowringhee and Lindsay Street crossing and built four temples along the four corners of the tank. The Tank is named as Monohardas Tarag. In course of time, different wholesale trade centres for diverse merchandise where established in and adjoining areas of the Great Bazar such as Tula Patti, Murgihata, Kathgola, Phalpatti, Mechua Bazar, Chaul Patti, etc.

50.*Prosonno Coomar Tagore Ghat* is located to the north of Jagnnath Ghat in close proximity to two other ghats, the *Adya Sradhva Ghat*, where Sradhya ceremony of Sheoprosad Jhoon Jhoonwala was performed, and Pathuria ghat. The S.P. Jhoon Jhoonwala Adya Sradhya

Ghat and the *Rai Bahadur Bisseswar lal/Har Gobind Sradh Ghat* are maintained from the endowment funds of the CPT. The P.C. Tagore Ghat is now maintained by the Calcutta Municipal Corporation. P.C. Tagore Ghat Committee takes care of the beautiful two storied structures in Victorian style having gorgeous cast iron gates and pillars of antique quality. P.C. Tagore (1801-1868), the youngest of the six sons of Gopimohan Tagore and grand son of Darpa Narayan Tagore of the Pathuriaghata Tagore family was educated in the Hindu College and was the editor of Reformer. He also founded the Hindu Theater and acted as a Governor of the Hindoo College (1832-1854).

51.*Moti Seal Ghat* : Located to the south of the Armenian Ghat, this ghat was built by Motilal Seal (1792-1854) himself. He worked as an agent of ship captains and served as a partner of a number of foreign agency houses which made him a wealthy native of the city. He also established himself in shipping trade and purchased large property in Calcutta including the Dhurmatollah Bazar. He built his house in Collutolla and donated the land for the establishment of the Medical College Hospital. A person given to charitable disposition, he established the "Seal's Free College" in 1842, the "Hindu HitarthiVidyalaya" (Hindoo Charitable Institution) in 1946 and the "Hindoo Metropolitan College" (Now Vidyasagar College) in 1853. Moti Seal was a person of secular temperament in his attitude towards education and business, but conservative in his approach towards caste and religion. He was a great philanthropic person who supported widow remarriage throughout his life. It is interesting to note that Motilal Seal had the courage to sue the E.I. Company and the Port in protest against the demolition of a number of Hindu ghats which were necessitated for the construction of Strand Road and the Strand Bank. His ghat was then moved further south for which his son, Heeralal Seal won the suit and was given compensation by the Port Commissioners. The ghat is now maintained by the C.P.T.

52.*Jackson Ghat,* marked in the maps of 1784 and 1795, as Bebee Johnson's Ghat in the map of 1825 and as Jackson's or Moylah Ghat in the map of 1842 was probably built by one Mr. Jackson from whom Motilal Seal purchased the Dharmotola Bazar.

53.*Palmer's Ghat* was located to the south of Berretto's Ghat and is marked in the map of 1825 only. The Palmer Company served as an agency and an important trade house in the early decades of the 19th century. The ghat was built for transportation of small merchandise through the ferry services of the Palmer Company.

54.*Foreman's Ghat* : located near the Jackson's ghat to the west of Clive Street, it is marked in the maps of 1784 and 1795. To the north of this ghat was situated the Blyth Ghat. Later it was renamed as Clive Ghat because of its location to the west of Clive Street in the map of 1842. The identity of Foreman is yet to be traced. But Mr. Blyth was a shipbuilder and had his ship building dock on the eastern bank of Hooghly near the old Fort to the west of B.B.D. Bag along with other shipbuilders of the time, like Mathius Smith, Company's Marine Officer, and one Mr. Black More. For this, the Clive Ghat had also been mentioned and marked as *Smith Ghat*. All these docks and ship yards had to be removed to the Howrah bank of the river at the time of the construction of the Strand Road in 1823. Later on, the docking companies of Mr. Smith and Mr. Blackmore forged an alliance to form the Calcutta Docking Co. Blyth's Company changed its name to form the Blyth Dry Dock and Shipbuilding Company Ltd. Further to the south, was located one of the oldest ghats of the city, *Old Fort Ghat,* to the extreme west end of the old Fort Ghat Street, presently named as Fairlie Place. It was the landing ghat of the old Fort of the E.I. Company and was also a busy port-ghat of the adjacent to the English Township. It was the first ghat which gradually transformed Calcutta to a city of Fort, Port and Palaces.

55.*The Old Fort Ghat* is marked in the map of 1784,1795,1825 and 1842. After the Fort was built in the Maidan area, the ghat was not in use and was moved to west at the time of construction of Strand Road. Presently, the Fairlie Ferry Ghat located in the same site, with facilities of jetties, is the centre of operation of Ferry Services to Metiaburuz and Botanical Garden down the stream and to Howrah Station on the west bank and Sobhabazar, Bagbazar, Kashipur, Ratan Babu ghat and Baranagar, run by the West Bengal Inland Water Transport Corporation. In this context, it may be mentioned that there are certain wharves and jetties for the use of the cargo steamers, sailing to Assam and other places in the *Jagannath Ghat* under the control of Central Inland Water Transport Corporation.

56.*New Wharf Ghat* located to the south west corner of the old Fort, is marked in the maps of 1784, and

1795 and also in the maps of 1825 as *Custom House Ghat*. In this area, there were a number of ghats which should be described as a group. The most easily identifiable location is the Koilaghat Street where there was a ghat. Interestingly, *Coelah Ghat* as marked in the map of 1842 is located to the east of present Koila Ghat Street. The Company Warehouse was originally built of clay during the early period of the Company without provisions of plank jetty. Early in 1760, a pucca wharf made of bricks was constructed in the Fort for strengthening of the banks and for providing better means of loading and unloading of goods.

57. To the south of Fort Ghat are marked the *Coela Ghat and Police Ghat* in the map of 1842. It is said that Coela Ghat was not related to coal in any way and is a local derivative of the word Kella meaning 'fort', suggesting the name of 'Old Fort Ghat' which it had replaced. On the other hand, if one takes account of the fact that the steam engine had already been introduced by the company for military purposes for sailing to Burmah before 1840 and that coal had to be dumped in the abandoned fort area for the supply of fuel to the engine, then it lends credence to the belief that Coela Ghat may have been the Coal Dumping Ghat to be used by the steamers and later, by steam engines of the Railways.

58. *New Dock Ghat*, marked in the map of 1795, was built by the Government in 1790 as a dock for the repair of pilot ships and stood along the site which later came to be known as Bankshall Ghat. The Dock was however dislodged in 1808. A reference may be made in this context to Colonel Watson, who in 1780, founded a marine yard by receiving a grant of land from the E.I. Company in an area which is now known as Watgunge. He commenced construction of a wet dock by diverting a small creek in 1781 but was prevented from its execution because of litigation with one Gokul Ghoshal whose land Watson allegedly acquired. In 1807 James and Robert Kyd, two sons of Col. Kyd, Chief Engineer of the Company acquired the old docks of Watson and launched at Kidderpore a seventy-four gunship, the 'Hastings' in 1818. Kidderpore was presumably named after the famous Kyd brothers.

59. *Bankshall Ghat*, marked in the map of 1825 is located to the western end of the Hare Street. Bankshall is a Dutch word which means a place of custom or toll collection.

60. To the South of Old Fort Ghat, and north of Bankshall Ghat was located the *Custom's House Ghat* in the map of 1825. It was so named because of the location of a Custom's House near the ghat. Once it was a busy ghat, as the goods, awaiting the Custom's clearance had to be brought to a place near by the Custom's House in boats to be finally discharged into/ from ships waiting somewhere down the river.

61. *Cuchagoody or Kuohagudy Ghat* is marked in the maps of 1784, 1795 and was located at the western end of the Hastings Street. It was presumably a ghat for carrying the country boats. Large number of country boats had to be used in Calcutta for carrying goods to and from the ships which had to be moored in mid-river. The creek that flowed through the Hastings from the river to the east was covered and a number of business houses were built on the both sides of the newly constructed Hastings Street. Alexander Colvin had his trade office in one of the houses on the Hastings Street for which the ghat was named as the Colvin's Ghat in the map of 1842.

62. *Mint Ghat* is marked in the map of 1825 and located in front of the Old Mint House of the south of Old Fort between Hare Street and Hastings Street. In 1831, the mint was moved to its new quarter between the northern end of the Clive Street and the Strand Road. In the meantime, the Mint Ghat was demolished for the construction of Strand Road and Strand Bank.

63. It is said that *Chandpal Ghat* is one of the older ghats in the city and was named after one Chandranath Paul who had a grocery shop located near the ghat. This catered to the shopping requirements of sailors, boatmen and traders.

64. *The Princep Ghat* was built in 1842-43 in memory of James Princep who was the Assay master of Calcutta Mint (1820-30) and acquired a place in history as an Indologist by deciphering the Asokan Edicts written in antiquated Brahmi script. He was also the Secretary of the Asiatic Society in 1832. Lord Allenborough, Governor General, left India in 1844 embarking on the yacht at the Princep Ghat. Princep Ghat had to be shifted further to the west for building of the Strand Bank between the Strand Road and the present site of the Princep Ghat. The Princep Ghat, just by the northern side of the approach to Second Hooghly Bridge, is within the temporary enclosure of the Second Hooghly Bridge Corporation. It has a stately colonnade adorned by doric pillars, presently being renovated by the Indian National Trust for Arts and Cultural Heritage

(INTACH).

65.To the north of Gwalior Monument towards Baboo Ghat are located two *Pani Ghats* opposite to the Fort Gate (Kella Darwaza). These are comparatively new ghats and possibly have been so named because the problem of water logging in the Maidan and fort area was taken care of by the means of an open sewerage draining the water into the Ganges.

66.*Baloo Ghat* was marked in the map of 1825 as located in the eastern side of Coolie Bazar above the Tolley's Nullah and in the map of 1842 as located in the south of Weigh Bridge Gun Shade on the South Western Gate of the Fort William in Maidan. The Baloo Ghat was supposed to have been built for unloading of huge amount of sand for the construction of the new Fort William. Because of its location near Weigh Bridge Gun powder, the ghat was also known as Gun Powder Ghat or Barud Ghat.

67.*Tqkta Ghat* located to the north of the present Marine House and to the West of the Eastern Naval Head Quarters known as 'Netaji Subhas Head Quarters of the Indian Navy' is, in fact, no ghat at all. There are wooden pontoons which were once used for the purpose of the transportation of the freedom fighters to Andaman by steamships.

68.*Baboo Ghat* : the busiest ghat for bathing, performance of Hindu religious rites etc. and for immersion of Durga and other images was built in 1830 by Baboo Rajchandra Das, husband of Rani Rashmoni. Rani Rashmani, the third wife of Rajchandra Das pursued a large number of philanthropic activities including construction of Dakshineswar Kali temple which is associated with Ramkrishna Paramhansha and his disciple Swami Vivekananda, the founder of Belurmath and Ramkrishna Mission.

69.*Outram Ghat* : Outram Ghat is a jetty, not a ghat, named after, General Sir Outram (1803-63) located in the region, south of Baboo Ghat. General Outram had daring military exploits and campaigns to his credit. One such feat was his Afghan expedition in 1839 and the capture of Lucknow from the hands of rebellious sepoys during the Sepoy Mutiny in 1858.

70.*Watgunge Ghat*, marked in the map of 1842 is presently known as Daighat and is being maintained by the CPT.

71.*Kalighat* though not a ghat on Hooghly, was re-excavated as a canal by Captain Tolly in 1775. The Adi Ganga (the original Ganga) had its meandering course flowing quietly till 1660, according to Van den Broucke's map, and later gradually got silted up. Inspite of a number of legends and hearsays regarding the hoary antiquity of Kalighat, the history of Kalighat goes back to the time of Abul Fazl's Ain-i-Akbari (1595-97). Van den Broucke (1660), interestingly, makes a mention of two names, 'Calcutta' to the South and Collecatta to the North of Daensa Logis, the latter being located on the site of the present Maidan. To him Calcutta and Collecatta were separate places, one in the South Calcutta and the other in the North Calcutta. Thus, Job Charnock might have landed in Collecatta near Soota Nooty and the E.I.Company's Fort was built nearby, resulting in the city name 'Calcutta'. Hoozurimull, the merchant and land promoter received a land grant of 12 bighas from the E.I.Company in Kalighat for erecting a Siva temple and construction of a ghat (1764-1770). It is believed that Santosh Roy, Raja of Barisa bore the cost of construction of the Kali temple. About 75 meters from Kalighat to the south west is located a burning ghat of holy sanctity, the "Keoratola", (once a place inhabitated by the caste `Keora' community) on the bank of Adi Ganga. In this burning that a number of eminent persons had been cremated including Desh Bandhu Chittaranjan, Sarat Chandra Bose, Ashutosh Mukherjee, Sarat Chandra Chattopadhyay, Biren Shashmal, Jatin Das and Satyajit Ray.

III

The stories of the ghats as narrated above may not be found by the astute historians as truely revealing their significance or even fully correct in details. Nevertheless, these would carry the readers back into the history of the city of Calcutta in terms of the story of its people as living entities. These are like mementos that keep memory alive and are worthy of remembering while commemorating the Port of Calcutta as their custodian.

AND QUITE FLOWS THE HOOGHLY

H.S. SARKAR

The Port of Calcutta is older than the city of Calcutta itself as it became the base on which the city grew. In 1686, an insignificant quarrel between some English soldiers and Mughul peons in a market-place was imprudently allowed to bring on hostilities. As a result, Job Charnock was compelled to retire from Hooghly and take shelter at Sutanuti, and after words Calcutta, in 1690. The outcome of the quarrel was the birth of a new port and a new city.

Navigability of the river Hooghly was questioned from time to time. Pessimistic views were expressed as early as 1853 regarding the inevitable death of the port, "however gradual or slow the process may be". Since then, the port has lived for more than 140 years. Optimism has triumphed over pessimism.

Attention was given towards improvement of the port at regular intervals. The most remarkable event in this regard was constitution of the Calcutta Port Trust with a permanent body for port administration on October 17, 1870. Bombay followed the example of Calcutta when the Bombay Port Trust Act was passed in 1873. The main objective of the Trust was to render efficient services. Charges for services rendered were fixed at the minimum without the objective of private gain. Customers satisfaction was still the prime concern of the port administration.

C.E. Buckland, Chairman of the Trust in 1903-04, stated in his valedictory address on April 25, 1904 : "I have always said, both in private as well as in public, that the Port Trust of Calcutta is a pattern working body — a model worthy of imitation by other working bodies, government and others in this city. We all assemble here to transact business; we do not talk too much, we waste no time and ever since I have known the Trust, there has been no occasion for checking the discussion and no idea of limiting the freedom of debate". He further stated that, "our proceedings have always been conducted in harmony and the interests of all concerned are well considered. Our objective has always been to develop the resources of the port and to afford greater facilities for trade, while cheapening costs. In these directions there has always been something going on". This is the tradition still being maintained, and no member of the Board of Trustees can even now deny the truth behind the remarks of Buckland.

Under the British rule, the port administration was not different form the general public administration in its treatment to the British officers and Indians. The important posts were held by the members of the ruling class. The privileged class of British officers holding key positions in the port drew a salary of around Rs. 2,000 per month. Besides, senior British officers were given a handsome allowance of Rs. 50 per month for maintaining the horses as they used to mount to inspect and supervise loading and unloading operations of vessels in the jetties. The salary of a constable deployed as a watchman on the Hooghly bridge was, however, only Rs. 12 per month. The fortunate ones amongst the Indians, like Babu Harolall Das who officiated as financial adviser of the port in 1889, were given Rs. 90 per month as officiating allowance plus a salary of Rs. 500 per month.

There is no denying that wage differentials were high. The Master of a vessel earned around 65 sterling pound per month which was 10 times that of a seaman. Likewise, the officer of a shed of the port earned around Rs. 125 per month which was more than 11 times the salary of a *Khalasi*. There was, however, no protest from any quarter as that was not the era of slogans. The concept of social justice had not yet been conceived of at least not found roots in India.

Unlike in the present day, the theory of reward and punishment was not only preached but practised very rigidly. The Deputy Harbour Master (Port), by helping supervise salvaging operations of a steamer which sank in the river Hooghly, following collision, earned a handsome reward of Rs. 500 from the owners of the vessel, Hoare Miler and Company. An inland vessel wharves cashier embezzled Rs. 2 from his day's collection and absconded in 1888. A warrant was issued.

His friend's petition to consider his case sympathetically was firmly turned down. The white-skinned rulers displayed equal firmness in dealing with the offenders from amongst their own brethren. One Assistant Harbour Master, who was found in an inebriated state while on duty, was dismissed. Another, after a similar examination by the surgeon, was demoted to the lowest level. Such swift action for similar offences will now be considered too harsh and also invite adverse comments from all quarters.

Compassion, too, was shown in deserving cases. When five infant children of a *Laskar*, who died accidentally, while on duty, prayed for relief, gratuity of Rs. 4 per month, about one-third of the salary of the deceased person was granted on compassionate grounds and arrangements made to have them transported safely to their hometown. Compassion seasoned with justice is the chief characteristic of just and fair administration. This aspect of the administration has never been lost sight of in the port administration and the tradition is being meticulously followed.

Instances of cases being handled in a casual manner by the police are not wanting. One example may suffice. In June, 1873, a woman was killed, crushed by a moving trolley at No. 4 jetty. The police, in their zeal to investigate the matter, took the dying woman to the Police Station to record her statement without rushing her to the hospital first. The line of action was, no doubt, amusing. Such occurrences, though rare, take place even now, perhaps proving that the administration maintains its own sense of priority !

Besides being an entrepot, the port of Calcutta was also responsible for exchange of culture and ideas between India and other nations. Raja Rammohun Roy was the first Indian to leave for Europe from Calcutta. He boarded the ship *Albion* in November, 1830. Dwarkanath Tagore boarded the vessel *The India* on January 9, 1842, and sailed for England. Swami Vivekananda left Calcutta for America on June 20, 1899, by the steamship *Golconda*. While cruising down the river Hooghly, Swamiji observed : ".....there is a certain unforgettable fascination in our Ganga of Calcutta, muddy and whittish — as if from contact with Shiva's body — and bearing a large number of ships on her bosom". As Swamiji visualised, quite flows our Ganga of Calcutta, unfolding her never ending fascination and charm. The city of joy goes on. The Port of Calcutta and trade carry on.

NOSTALGIA THAT IS CALCUTTA

P.C. SEN

The East is East, the West is West : the twain shall never meet. Thus wrote Rudyard Kipling. But the twain did meet and the product was the port of Calcutta which eventually developed into the City of Calcutta, the cradle of what is called Modern India. Thus Calcutta was not only born at the confluence of the *Ganga* (Hooghly) and the *Sagar* (Bay of Bengal) but also of the confluence of the East and the West.

This does not, however, imply that there had been no port or port-city in India before the East and the West met. Of course there had been quite a few in different periods of history in various parts of India with their respective contributions to prosperity and progress. Mention may be made here of some, *viz*, Benaras, Pataliputra (Patna) and Champa (Bhagalpur) beside the ports of Bengal, *viz*, Tamralipta (Tamluk), Saptagram (Satgaon) and Chittagong (the last one being now in Bangladesh).

There is no denying the fact that Calcutta is Calcutta. The status of Calcutta, both as a port and a city, is unique in every sense of the term — unique in its growth and development, difficulty and defiance, struggle and success, impact and importance. Truly has it been said that if the waves of the Ganga could speak, they would have told us a story, fascinating yet true, of some stray villages developing into the great gateway of trade and commerce and then providing not only commercial and economic but also political and cultural leadership to the entire subcontinent.

II

As is well-known, it is no altruistic purpose that inspired the Europeans to sail for India, to seek settlement in Bengal among others and ultimately to lay the base of Calcutta. It was the stories of riches of India in the form of various minerals, plants and products, as described by travellers like Bernier, that fired their imagination and lured them to take the hazards of undertaking such long and arduous journeys to the territory they had never seen. Indian products like spices, textiles, sugar, silk, lac, saltpetre, etc. were in great demand in the western world. The silk and cotton textiles of Bengal were the finest in the world and served as status symbols of wealthy people there.

No wonder that there was keen competition and bitter rivalry among merchants and adventurers of various Western countries for grabbing those riches as fast and as much as one could. One Western country after another appeared on the scene and with the appearance of each, a particular place thrived and developed as a port. In the long run, however, the group of villages, to develop eventually as Calcutta, emerged as the centre of attraction for the contending European countries, namely Portugal and England; the others, Holland and France, having already retired from the scene.

It was the Portugese who first arrived and by 1500 established a virtual trade-monopoly in Bengal. Though they initially used the already existing port of Saptagram, they subsequently shifted to what is known today as Garden Reach. It was indeed a fateful day when they first dropped anchor off this place — fateful because it anticipated by one hundred years the entry of the first British ship, *Falcon*, into the area. To cut a long story short, it is this event, the anchoring of the Portugese ship at the said place, that initiated the process which culminated in the foundation of Calcutta, thanks to the conclusive and decisive role played by Job Charnock.

III

Some people taking the cue from Kipling's description of Calcutta as a chance-erected, chance-directed city believe that it owed its foundation to the whim of Charnock. This, however, is not true. It was the greater and better conveniences that the cluster of villages, then known as Sutanuti, Govindapur and Kolikata, afforded as a riverine port that led Charnock select the area, which later grew and developed to the port-city of Calcutta. Inconveniences were there, some

of which still cause anxiety, particularly those relating to the nature of the river Ganga, or more specifically the Hooghly. That the conveniences far out-numbered and outweighed the inconveniences is borne out by later developments. What Charnock looked for were security, economic advantages, sea-going facilities and excellent anchorage. None of the sites which Charnock visited fulfilled these requirements. It was Calcutta and Calcutta alone which satisfied all the needs.

The place provided for a naval power like England a secure position which would be most difficult to assail for the Mughals and Marathas, both fighting for supremacy. Second, it offered great economic advantages as there were in the area many village marts *hats* and *bazars* full of exportable articles and a good number of trades people as well. Third, the place being situated only some 100 miles away from the Bay of Bengal afforded great facilities for maritime trade. Last but not the least, the stretch of water from Garden Reach to where the first Howrah bridge (Rabindra Setu) stands, offered excellent anchorage and could accommodate a large number of sea-going vessels. Subsequent developments furnish further justification in favour of Charnock's selection on many more counts namely proximity to coal-mines, jute-growing districts, and upcountry markets.

IV

Rome was not built in a day. Calcutta could not be the Port-City of Calcutta had it not passed through several stages. Following the official formation of the Port Commission we may discern five distinct stages in its development.

The first stage is that of the sailing ship lying at river-moorings, loading and unloading its cargo by boat in a most leisurely way taking months for the work extending to the construction of jetties in the sixties of the 19th century. The second stage witnessed a significant growth in imports and exports and the replacement of sailing vessels by steamers. The most notable achievement of the third stage was the opening of the Kidderpore Docks. The fourth stage extending from the World War-I to the World War-II was a period of initial suspense and then of confidence and construction, the most outstanding being the King George's Dock. The fifth stage started with the Independence of the country and the port of Calcutta entered a new phase — the phase of planned development, which is still on.

While speaking of the formative period of the Calcutta port, the names of some individual enterprisers deserve special mention, such as Colonel Watson, two Kyd brothers, James and Robert Kyd, and Major W. Tolly. Watson undertook the first ever docking project and also pioneered the work of ship building. After his retirement from the ventures, the Kyd brothers proceeded with the same and completed the work left incomplete. Major Tolly, on the other hand, excavated a silted up channel of the Ganga which later served as an useful navigable canal. The places now called Watgunge and Kidderpore and the canal now known as Tolly's Nullah still bear their names respectively.

V

In 1857 took place the first war of Indian independence, disparagingly called the Sepoy Mutiny by some British historians and the following year the India Act was passed. As a follow up, some of the policies so long pursued by the East India Company underwent significant changes which in their turn produced far-reaching consequences upon the economic development of the country.

Having grown wiser by experience, the British turned their attention to improving and extending the facilities of transport and communication. Railways and telegraphs were introduced. Inland navigation was improved and extended. These measures led to further development and changes in the economic field which were appreciably accelerated by the opening of the Suez canal. All these developments led to what may be called a commercial revolution. Not only that, they went a long way in effecting a shift from an age-old agricultural economy to a nascent industrial economy. Attention shifted from food-crops to cash crops like indigo, jute, tea, etc.

The Port of Calcutta grew manifold. Sea-borne trade increased considerably both in value and in volume. Need was felt to improve the administration which had so long been virtually free from Governmental control. The idea of a "Trust" representing commerce, trade, shipping, municipal and governmental interests gained ground. However, when the trust, known as the River Trust, was formed by virtue of the Act of 1866, it was made simply a department of the Municipality under a sub-committee of Municipal Commissioners, then known as Justices. The other interests were totally and

unceremoniously ignored. As apprehended, it failed to deliver the goods.

In October, 1870, came into effect the Calcutta Port Trust Act V, and the premier Port Commission of India came into existence. This Act not only removed many of the defects and deficiencies of the earlier legislations, it also considerably extended the scope of its activities and made provision so that it could run as a self financing organization and serve as a model for other Port Commissions.

The persons, who were appointed Commissioners, proved their mettle. It was under their management that various schemes were undertaken and implemented and the port achieved multi-dimensional development. A huge but useful building to serve as Head Quarters was built; new jetties fitted with steam cranes were constructed; wharves were enlarged; facilities for coasting steamers were increased; dredging for keeping the river navigable was undertaken; pilot service was better organized and so on. Work in the port increased so much that night-shift had to be introduced. Indeed, if morning shows the day the achievements of the Commission during the first two decades did surely show that the future of the port was destined to be ever better, ever brighter.

VI

It was however no smooth sailing. Problems of various kinds appeared and made it difficult for the Commission to go ahead. The 20th century opened ominously for the Commission. Grave charges of mismanagement were levelled against the Commission itself. Then in 1907 took place a long-drawn workers' strike demanding higher wages and better housing facilities. In 1911 the capital of British India was shifted from Calcutta to Delhi, affecting somewhat adversely the interest of the Port-city. In 1914 the first World War broke out and disrupted the communication and transportation system resulting in a sharp decline in imports and exports. The Great Depression of 1929-30 further aggravated the situation. The Second World War, though serving as a booster to Indian industries, endangered the very existence of the port. In the face of the Japanese air-raids the authorities had to evacuate large number of workers while others left the city in panic. Then in 1947 came the Partition of India causing the loss of large parts of its hinterland.

The above mentioned problems, however grave, were passing phases and were overcome in due course. But there was at least one problem, the most important of all the problems, which emerged as a completely different kind. The Port has been living with it since the date of its origin and establishment. It is a paradox that the very same river, the Hooghly, which has nursed and fostered it, has also been a chronic problem and permanent threat to its existence.

The fate of a port, everybody knows, depends upon the navigability of the river on which it stands. It is in this vital requirement that the Hooghly has been badly wanting. Characterised by shoals and sandbanks, twists and turns, swirling currents and, at places, dangerous shallowness, the 120 miles long stretch of the river from the Fort William to the Sandheads, the river presents a grim picture for the navigators. Some of these problems, however, have been successfully overcome, thanks to the excellent service rendered by pilots. But the problem relating to lack of adequate and sustained headwater supply, though tackled to some extent in post-independence decades, still remain a challenging one.

Under the Constitution of Independent India the port being a Central subject, the Ministry of Transport and Shipping, in whose charge it has been placed, engaged itself in studying the problem of shallow draught and finding a permanent solution to it. The construction of the Farakka Barrage was taken up which, since completed, has been in operation and holding out the promise of solving the problem for good by ensuring a perennial supply of an adequate quantity of water to the Hooghly.

Side by side with the construction of the barrage, the authorities also took up another project, the Haldia Project, which as a subsidiary port, would supplement the Calcutta Port. This project also has been completed and made operative already. As a part of the Calcutta Port, the Haldia sub-port is to overcome the limitations of the latter on three counts — navigational, berthing and smother shipment. The Farakka Barrage on one hand and the Haldia sub-port on the other would go a long way to solving the problems of the Hooghly. Just as the Calcutta Port on its eastern bank has led to a phenomenal development, so also the Haldia port on the western bank would hopefully do the same.

VII

It was in 1955, forty years ago that late Lal Bahadur Shastri, the then Minister in charge of Transport &

Shipping, asserted that "the Calcutta Port is our biggest port and it will continue to be so". Much has been done since then to retain the port in its premier position and ever to attain new heights. The recent policy of liberalisation adopted by the Centre and substantially endorsed by the State, if judicially implemented, is sure to cause a manifold increase in the business of the Calcutta Port and its subsidiary and enhance its position still further. It is in this context that in the Gateway'95 held recently in Calcutta, Mr. Albert Hoser, President, Siemens U.S. in his speech as Chief Guest on February 1, the opening day of the meet, appealed to investors, industrialists, businessmen and others concerned "to come forward and make Bengal (i.e. Calcutta) the gateway for the fast emerging Pacific and South East Asian markets." Hopefully, this appeal would evoke the response it deserves and Calcutta would again be shinning in its full glory. There is good reason to feel hopefull.

Calcutta, as we all know, is a port-city. As a port it is a centre of trade and commerce, as a city it is a centre of art and culture — a meeting place of great minds. In the foregoing pages, an attempt has been made to tell the fascinating story of Calcutta in its first aspect, to the exclusion of the second aspect, the story of which is much more fascinating, if not enchanting. It is by virtue of its premier position in this aspect that despite the shifting of the Administrative Capital to Delhi, Calcutta is still regarded as the Cultural Capital of the country. The position of the port-city is unique in both the worlds commerce and culture.

STATISTICAL APPENDIX

STATISTICAL APPENDIX

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Export & Import Traffic

Calcutta Port (In thousand metric tonnes)

Year	Import	Export	total
1870-71	1474	1802	3276
1871-72	1475	1936	3411
1872-73	1471	1882	3353
1873-74	1500	1834	3334
1874-75	1511	1780	3291
1875-76	1482	1802	3284
1876-77	1757	2231	3988
1877-78	2068	2678	4746
1878-79	1423	2067	3490
1879-80	1494	1944	3438
1880-81	1675	2172	3847
1881-82	1743	2239	3982
1882-83	1852	2339	4191
1883-84	1811	2303	4114
1884-85	1577	2045	3622
1885-86	1695	2105	3800
1886-87	1749	2302	4051
1887-88	1783	2356	4139
1888-89	1819	2331	4150
1889-90	1803	2344	4147
1890-91	1845	2342	4187
1891-92	1916	2481	4397
1892-93	1801	2478	4279
1893-94	1846	2408	4254
1894-95	1846	2572	4418
1895-96	1860	2589	4449
1896-97	1975	2556	4531
1897-98	2158	2780	4938
1898-99	2080	2629	4709
1899-00	2092	2495	4587
1900-01	2332	3203	5535
1901-02	2272	3223	5495
1902-03	2225	3170	5395
1903-04	2314	3695	6009
1904-05	2586	4539	7125
1905-06	2705	4689	7394
1906-07	2734	5551	8285
1907-08	2907	5689	8596

Contd.

Export & Import Traffic

(In thousand metric tonnes)

Year	Import	Export	total
1908-09	2789	5508	8297
1909-10	2794	5504	8298
1910-11	2967	6058	9025
1911-12	3081	6327	9408
1912-13	3276	6824	10100
1913-14	3386	6214	9600
1914-15	2833	5198	8031
1915-16	2922	3900	6822
1916-17	2458	4651	7109
1917-18	2221	2940	5161
1918-19	2415	3555	5970
1919-20	2989	4988	7977
1920-21	4122	6113	10235
1921-22	3477	3894	7371
1922-23	3025	3784	6809
1923-24	2979	4458	7437
1924-25	3165	4789	7954
1925-26	2942	5608	8550
1926-27	2979	6385	9364
1927-28	3143	7458	10601
1928-29	3983	7027	11010
1929-30	3382	7659	11041
1930-31	2796	6069	8865
1931-32	2368	5686	8054
1932-33	2194	5431	7625
1933-34	2253	5446	7699
1934-35	2754	5754	8508
1935-36	2515	5845	8360
1936-37	2569	6108	8677
1937-38	2546	6533	9079
1938-39	2511	6830	9341
1939-40	2995	7127	10122
1940-41	2359	5510	7869
1941-42	2160	5724	7884
1942-43	1124	2558	3682
1943-44	2818	2811	5629
1944-45	5550	3641	9191
1945-46	5132	5921	11053
1946-47	2072	4469	6564

Composition of Cargo

Calcutta Port

(In '000 Tonnes)

Commodity	1947-48	48-49	49-50	50-51	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60
SEA- BORNE IMPORTS :													
P.O.L.(Crude)	-	-	-	-	-	-	-	-	-	-	-	-	-
P.O.L.(Product)	523	658	796	767	898	956	885	973	1093	1230	1287	1208	1451
Foodgrains	353	769	1067	630	1688	1084	562	442	209	733	1129	1313	1329
Fertiliser	77	66	104	119	48	11	14	24	30	10	60	51	64
Raw materials for fertiliser	-	-	-	-	19	30	18	31	34	36	29	39	54
Salt	603	506	615	561	511	476	436	462	499	426	474	390	359
Cooking Coal	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron, Steel &Machinery	139	145	272	230	149	131	188	293	536	988	1252	996	670
Cement	-	-	-	-	59	26	52	80	52	53	187	67	2
Sugar													
Edible Oil													
Other liquid cargo													
General Cargo	828	1145	1053	693	787	658	612	987	1011	947	1186	1082	1105
Sub-Total Imports :	2523	3316	3907	3000	4159	3372	2767	3292	3464	4423	5604	5146	5024
SEA BORNE EXPORTS:													
Coal	1675	2551	2698	2137	3167	3434	2436	2302	1867	2024	2076	1820	1705
Iron ore	101	90	108	277	449	960	1083	565	882	786	1003	786	1116
Jute & Jute Products					946	778	910	933	951	952	933	914	1004
Tea					179	178	213	181	147	192	145	176	175
Iron Steel & Machinery	69	3	41	27	27	28	22	18	18	11	10	21	43
Other General cargo	*2643	*2274	*2152	*2077	782	1049	749	634	770	605	539	476	694
P.O.L.	48	30	10	14	28	29	8	14	61	19	9	7	13
Sub-Total Exports :	4536	4978	5009	4532	5578	6456	5421	4647	4696	4589	4715	4200	4750
I.V. Wharves Traffic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1715
Grand Total :	7059	8294	8916	7532	9737	9828	8188	7939	8160	9012	10319	9346	11499

* Includes export of Tea and Jute + Jute Products

Composition of Cargo

Calcutta Dock System

(In '000 Tonnes)

Commodity	1960-61	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74
SEA BORNE IMPORT														
P.O.L.(Crude)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.O.L.(Product)	1461	1680	1909	1890	1828	1425	1318	1201	1101	1144	1158	1240	1216	1104
Foodgrains	1800	993	1083	1553	1696	1523	2422	1841	1085	788	852	1084	157	520
Fertiliser	74	82	111	190	118	232	387	480	465	209	111	155	302	348
Raw materials for fertiliser	51	42	72	54	77	62	50	92	58	27	3	31	76	43
Salt	357	392	408	396	328	323	181	266	280	201	151	300	362	206
Iron, Steel & Machinery	526	419	518	580	739	560	299	265	235	245	292	552	529	314
Cement	22	62	151	211	285	156	155	112	33	43	34	55	63	34
Sugar														
Edible Oil														
Other liquid cargo														
General Cargo	1201	1214	1228	1154	1012	1003	980	628	666	466	429	716	693	495
Sub-Total Imports :	5492	4884	5480	6028	6883	5284	5792	4885	3923	3123	3030	4133	3398	3064
SEA BORNE EXPORTS:														
Coal	1385	1704	2118	1932	1761	1370	1121	904	909	970	660	786	795	725
Iron ore	731	632	550	790	911	820	730	556	437	374	337	196	242	182
Jute & Jute Products	956	970	1092	1133	1227	1133	956	1009	870	723	687	909	725	747
Tea	159	179	181	163	180	148	151	161	154	126	124	125	136	146
Iron, Steel & Machinery	84	87	83	82	134	199	387	573	637	507	271	154	166	145
Other General cargo	625	772	607	705	646	786	845	804	811	657	613	370	395	449
P.O.L	69	74	92	105	121	108	122	100	137	130	78	69	73	41
Sub - Total Exports :	4009	4418	4723	4910	4980	4564	4312	4107	3955	3487	2767	2609	2532	2435
I.V. Wharves Traffic	1646	1694	1761	1613	1413	1140	850	738	571	529	384	510	515	443
GRAND TOTAL :	11147	10996	11964	12551	12476	10988	10934	9730	8449	7139	6181	7252	6445	5942

Composition of Cargo

Haldia Dock Complex

(In '000 Tonnes)

Commodity	1968-69	69-70	70-71	71-72	72-73	73-74
SEA BORNE IMPORT						
P.O.L.(Crude)					174	418
P.O.L.(Product)	77	276	217	617	576	408
Foodgrains						
Fertiliser						
Raw materials for fertiliser						
Salt						
Cooking Coal						
Iron, Steel & Machinery						
Cement						
Sugar						
Edible Oil						
Other liquid cargo						
General Cargo						
Sub-Total Imports :	77	276	217	617	750	826
SEA BORNE EXPORTS:						
Coal						
Iron ore						
Jute & Jute Products						
Tea						
Iron, Steel & Machinery						
Other General cargo						
P.O.L						
Sub - Total Exports :						
GRAND TOTAL :	77	276	217	617	750	826

Composition of Cargo

Calcutta Dock System

(In '000 Tonnes)

Commodity	1974-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91
SEA - BORNE IMPORTS :																	
P.O.L.(Crude)	-	-	-	-	-	-	-	-	-	-	-	-	-				
P.O.L.(Product)	783	517	357	395	569	420	676	482	474	412	597	737	655	831	896	985	992
Foodgrains	1120	1094	1026	109	56	-	68	172	423	922	188	2	9	62	179	41	-
Fertiliger	412	351	353	289	523	279	512	334	145	111	401	391	293	153	164	309	148
Raw materials for fertiliser	78	49	80	109	122	90	77	129	107	79	124	214	129	184	127	149	151
Salt-	361	149	241	143	217	179	214	52	148	102	36	30	18	15	-	-	-
Cooking Coal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron, Steel &Machinery	371	191	151	108	176	414	253	486	584	310	355	392	403	370	346	424	323
Cement	81	44	7	6	78	106	157	240	175	168	140	168	128	183	160	59	37
Sugar	-	-	-	-	-	-	14	36	-	-	35	159	121	68	10	45	-
Edible Oil	8	19	29	63	100	93	108	105	75	87	104	80	122	124	94	19	141
Other liquid cargo	-	-	-	-	-	-	5	25	18	37	28	20	34	31	34	31	22
General Cargo	414	321	354	344	427	529	459	769	917	648	729	847	981	1335	1296	1197	1148
Sub-Total Imports :	3628	2735	2598	1566	2268	2110	2543	2830	3066	2876	2737	3040	2839	3356	3306	3249	2972
SEA BORNE EXPORTS:																	
Coal	897	918	790	686	525	164	219	339	378	262	94	65	62	8	-	-	-
Iron ore	107	118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jute & Jute Products	731	619	490	626	383	612	571	556	357	202	283	287	350	276	224	238	208
Tea	179	155	196	159	139	146	152	159	133	116	131	163	126	103	100	118	96
Iron Steel & Machinery	119	375	730	582	380	202	128	86	84	75	126	118	91	120	47	64	125
Other General cargo	381	408	487	431	400	336	213	268	315	304	342	196	223	175	386	382	389
P.O.L	36	169	82	43	37	33	18	34	43	63	67	35	77	75	41	46	43
Sub - Total Exports :	2450	2762	2775	2527	1864	1493	1301	1442	1310	1022	1043	864	929	757	798	848	867
I.V. Wharves Traffic	388	302	340	257	259	240	222	176	199	190	208	259	225	280	234	242	287
Grand Total :	6466	5799	5713	4350	4391	3843	4066	4448	4575	4022	3988	4163	4047	4393	4338	4339	4125

Composition of Cargo

Haldia Dock Complex

(In '000 Tonnes)

Commodity	1974-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91
SEA - BORNE IMPORTS :																	
P.O.L.(Crude)	865	1333	1900	1899	2187	2528	2335	2213	2495	2583	2401	2845	2700	2719	2701	2758	2901
P.O.L.(Product)	593	411	363	500	657	1019	1839	1272	965	1020	1385	1653	1604	1665	2274	2079	2727
Foodgrains	-	-	-	-	3	-	-	-	-	16	16	-	-	3	108	27	-
Fertiliser	-	-	-	-	41	45	47	30	28	96	159	80	78	39	75	75	83
Raw materials for fertiliser	-	-	-	-	-	26	39	60	66	115	114	86	103	114	164	144	203
Cooking Coal	-	-	-	-	40	212	17	42	245	62	46	470	422	500	672	954	1251
Iron, Steel &Machinery									6		4	13	23	8	26	35	26
Cement	-	-	-	-	42	18	42	26	-	20	25	41	36	8	26	7	-
Sugar	-	-	-	-	-	-	5	4	-	-	17	36	7	-	-	-	-
Edible Oil	-	-	-	-	-	-	4	-	-	-	5	-	-	10	-	5	6
Other liquid cargo	-	-	-	-	-	-	-	-	-	-	-	22	101	116	163	102	104
General Cargo	-	-	-	-	28	43	117	193	134	80	75	112	137	148	83	185	144
Sub-Total Imports :	1458	1744	2263	2399	2998	3891	4445	3940	3939	3992	4247	5358	5212	5322	6292	6371	7444
SEA - BORNE EXPORTS :																	
Coal	-	-	18	350	271	357	648	1042	1506	1623	1568	1784	2059	2624	2933	3190	2868
Iron ore	-	-	-	133	96	88	13	13	10	20	6	-	-	-	-	-	-
Jute & Jute Products	-	-	-	-	-	-	-	-	-	3	9	5	2	6	-	12	12
Tea	-	-	-	-	-	-	-	-	-	19	22	6	28	66	65	83	80
Iron, Steel & Machinery	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	7	9
General cargo	-	-	-	1	15	34	54	39	43	47	41	22	38	39	38	119	107
P.O.L.	-	458	364	573	467	582	286	444	618	676	642	789	686	622	557	568	594
Sub Total Exports :	-	458	382	1057	849	1061	1001	1538	2177	2388	2289	2606	2813	3357	3593	3979	3670
Grand Total :	1458	2202	2645	3456	3847	4952	5446	5478	6116	6380	6536	7964	8025	8678	9885	10350	11114

Composition of Cargo

Calcutta Dock System

(In '000 Tonnes)

Commodity	1991-92	92-93	93-94	94-95
SEA- BORNE IMPORTS :				
P.O.L.(Crude)	-	-	-	-
P.O.L.(Product)	1015	1711	1575	1988
Foodgrains	-	58	46	-
Fertiliser	203	198	156	98
Raw materials for fertiliser	132	142	76	107
Salt	5	-	-	-
Iron, Steel &Machinery	18	37	213	244
Cement	48	9	-	-
Sugar	-	-	-	326
Edible Oil	68	40	68	104
Other liquid cargo	13	20	31	24
Other Cargo	1246	1320	1110	1134
Sub-Total Imports :	2748	3535	3275	4025
SEA BORNE EXPORTS:				
Coal	-	-	-	-
Iron ore	-	-	-	-
Jute & Jute Products	234	180	197	201
Tea	152	101	108	89
Iron Steel & Machinery	190	312	488	347
Other cargo	483	693	742	772
P.O.L.	47	37	48	52
Sub - Total Exports :	1106	1323	1583	1461
I.V. Wharves Traffic	303	299	311	318
Grand Total :	4157	5157	5169	5804

Haldia Dock System

(In '000 Tonnes)

Commodity	1991-92	92-93	93-94	94-95
SEA - BORNE IMPORTS :				
P.O.L.(Crude)	3072	3031	3115	3277
P.O.L.(Product)	2925	3290	3100	3433
Foodgrains	-	49	29	-
Fertiliger	72	115	68	52
Raw materials for fertiliser	175	205	141	179
Cooking Coal	1795	2089	2001	2285
Iron, Steel &Machinery	14	37	22	14
Cement	-	-	-	-
Sugar	-	-	-	201
Edible Oil	-	-	-	-
Other liquid cargo	176	235	189	395
Other Cargo	91	187	178	140
Sub-Total Imports :	8321	9238	8843	9976
SEA - BORNE EXPORTS:				
Coal	2802	2960	3427	3556
Iron ore	-	-	-	-
Jute & Jute Products	3	4	11	10
Tea	32	33	29	30
Iron Steel & Machinery	8	37	127	134
Other cargo	46	37	32	44
P.O.L.	631	871	858	981
Total Exports :	3522	3942	4484	4755
Grand Total :	11843	13180	13327	14731

ERRATA

Due to extreme rush, I could not remove a number of printing errors as listed below. The readers and authors, in their good grace, may condone the fault. I have not tried to adopt any standard spelling of place names as all the versions appearing in this anthology are in common use.

- Editor

LIST

Location				
Page	Para	Line	As printed	To be read as
Forward				
3	1	8	revenuyielding	revenue yielding
Preface				
1	3	4	farsightness	farsightedness
On the Contributors				
Name			Donald McDowell	Donald Malcom McDowell
Text - P.S. Mukhopadhya			...Deputy Chairman	...Deputy Chairman (HDC)
Text-B.J.Thomas			Organisatins	Organisations
Table of Contents				
3 Author			A. Ananthakrishna	A. Ananthakrishnan
After P.28 Author			A. Ananthakrishna	A. Ananthakrishnan
Text				
5	5	7	Key	quay
20	8	2	Port Trust	Port Commissioners
27	5	7	1947	1947-48
28	1	6-8	Haldia-Budge Budge.....larger volumes	*Delete the entire line*
54			Figure - 2	*Figure-3 & should be placed at P.64*
64			Figure-4	*Figure-2 & should be placed at P.54*

Location				
Page	Para	Line	As printed	To be read as
Text				
97	6(i)	1	MT "Gandhar" E	MT "Gandhar" A
130	2	10	Privitise	Privatise
133	2(c)	3	servcices	services
138	3	11	ancourage	anchorage
151- Author			A.Ananthakrishna	A. Ananthakrishnan
201	4	9	(IWAT)	(IWAI)
201	4	10	develope	develop
202	1	5	Badarpour	Badarpur
202	1	14	Halida	Haldia
202,Table-1		5	4639	4635
202,Table-2		1	lingth	length
202,Table-2		7	West Cost	West Coast
202,Table-2		8	Suari	Zuari
202,Table-2		11	Mrishna	Krishna
202,Table-2		11	Vijawada	Vijaywada
203	1	3	plays in	plays an
203	1	4	32%	36%
203	1	5	34%	38%
203	2	1	Calccutta	Calcutta
203	2	2	Ttrend	Trend
203	2	3	Castal	Coastal
203	3	2	Inititally	Initially
203	3	5	Planed	Plant
203	3	14	coverted	converted
203	4	4	oilJetties	oil Jetties
203	4	5	Po1	POL
203	5	2	non-dengerous	non-dangerous
203	7	1	CDS & HDS	CDS & HDC
203	8	2	filllip	fillip
203	9	5	increase coastal	increase of coastal
203	9	6	77%	68%
205, Table-3 Heading			TRAFFICC	TRAFFIC
206,Table-3 Heading			TRAFFICC	TRAFFIC

Location				
Page	Para	Line	As printed	To be read as
Text				
206, Table-3		a) coal	1969	2969
206, Table-3		b) POL	636	639
206, Table-3		d) POL	141	241
206, Table-3		Total cargo	133327	13327
206, Table-3		% share	37.08	32.08
206,Table-4		1988-89	111220	11220
207	1	1	Indian	India
207	1	8	I.e.	i.e.
207	1	11	india's	India's
207	7	1	Amingao	Amingaon
208	1	11	William Son Major	Williamson Magor
208	1	12	Pary	Parry
208	2	1	Amingoan	Amingaon
208	3	2	parts	ports
208	3	8	became	become
208	4	2	concerns	concerned
212	5	2	marketing	making
212	6	1	consideration,	consideration.
213	3	2	dissimination	dissemination
213	3	4	press	Press
215	4	3	Country	country
219	3	10	ASYCUDA	(ASYCUDA)
220	2	7	maritime	Maritime
235	4	6	a nauseum	ad nauseum
235	7	2	Lets	Let us
239	1	6	Khrai	Akhrai
239	1	10	property of	property to
240	9	1	Darmohata	Darmahata
243	3	4	Southern	southern
243	5	4	Railway Passenger	railway passenger
243	6	1	South	south
243	7	10	masterics	master pieces

Location				
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Text				
244	2	13	1946	1846
244	5	8	of Hooghly	of the Hooghly
244	5	25	to the English	English
246	7	1	was re-	was located on
246	7	2	excavated as a	re-excavated as a
246	7	26	burning that	burning ghat
247	1	7	after words	afterwards
252	1	19	hopefull	hopeful
252	2	12	the worlds	the worlds of

DATE DUE

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